

Loss of radiant heat also increases, both from insulated and uninsulated surfaces. This cycle of more blowers to remove more heat to lose more heat to remove more heat is extremely undesirable. Of course, the obvious solution is to insulate efficiently in the beginning.

In every power plant there is a heat loss from all heated surfaces and a heat loss to all cooled surfaces.

Heat loss may occur in three ways; by conduction, by convection, and by radiation.

The manner of heat flow is most important in insulation because it is the low conduction which results in the greatest temperature differential between a hot insulated surface and the atmosphere (as in steam piping insulation), or the relatively warm atmosphere and a cold surface (as in refrigerating plant insulation). Conduction is associated with solids and comparison of materials in this respect is measured by a factor called the "thermal conductivity" which expresses rate of conductivity in British thermal units (BTU) per inch of thickness per hour per square foot of area per degree Fahrenheit temperature differential.

Radiation is the method of heat transfer by which a hot body gives off energy in the form of radiant heat which is emitted in all directions. The surface condition greatly affects the ability of a body to radiate heat. Dull, dark, rough surfaces (such as CMC pipe), are the best radiators.

In order to minimize the transfer of heat from or to a body which is hotter or colder, respectively, than the surrounding atmosphere, thermal insulation is applied. Thermal insulation is a material or materials of low thermal conductivity.

While increasing the economy of the plant, thermal insulation, (as was mentioned previously), reduces the quantity of air necessary for ventilation and cooling requirements and prevents injury of personnel due to contact with hot parts of apparatus. It also insures more uniform heat distribution within equipment. Another function of thermal insulation is to prevent "sweating" of cold surfaces on which atmospheric moisture condenses thus causing undesirable dripping as well as accelerated corrosion of the metal.

I wish to emphasize that insulation must be sufficiently effective to reduce heat losses and lower surface temperatures to a degree which will permit habitable conditions in a specific space or compartment.

Insulating materials must possess certain characteristics. These are:

- a. Low heat conductivity.
- b. Noncombustibility
- c. Lightweight.
- d. Capability of easy molding and application.
- e. Moisture repellent.
- f. Noncorrosive, insoluble, and chemically inactive.
- g. Composition, structure, and characteristics unchanged by temperature at which it is to be used.
- h. Once installed, should not cluster, become lumpy, disintegrate or build up in masses from vibration.
- i. Vermin proof.

All of us are familiar with the available forms of insulating materials such as:

- a. Molded sectional pipe covering:
 - (1) Magnesia
 - (2) Diatomaceous earth
 - (3) Cork
- b. Block
 - (1) Magnesia
 - (2) Diatomaceous earth.
 - (3) Cork
- c. Blanket insulation
 - (1) Amosite
- d. Plastic
 - (1) Magnesia cement
 - (2) High temperature cement

These familiar materials have been with us and in use on ships as long as any of us can remember.

During World War II a few changes in materials were made. Uribestos, which is amosite in pipecovering sectional form, was introduced. Also, we started using blanket insulation such as glass on ventilation systems. After the carrier Lexington was sunk, as well as because of uncontrollable fires on other battle-scarred vessels, we substituted asbestos cloth and glass cloth for canvas as a lagging material.

Until recently, methods of installing insulating materials remained almost the same as always. Probably the most radical change was that of substituting the use of adhesives for the needle and thread in the application of cloth lagging.

Greater efficiency of power plants dictates increases in both pressures and temperatures used. Aside from the problems of metallurgy and fabrication of piping systems Pipe Shops must be increasingly alert to the need for more effective insulating materials and processes.

Developers of insulating materials have, in the last few years, produced many new insulating materials. Many of these lend their characteristics readily and favorably to shipboard uses.

We are familiar with the problems encountered in insulating deck steam lines aboard tankers. Because a loaded tanker in heavy seas has its decks constantly awash, insulating materials such as magnesia, which readily absorb salt water, are of little value. Each time insulation absorbs salt water, salts are introduced into the material. The pipe is heated, water being evaporated and leaving the salts. Each subsequent soaking brings additional salt until the insulation is filled with foreign material and becomes entirely useless.

Any solution to the problem of deck steam piping insulation demands that the insulation be completely water-proofed.

Two solutions offer themselves: the first, and possibly most obvious, would be to replace the catwalk on the deck of the tanker with a waterproof tunnel-like passage from forecastle to poop deck. This would permit personnel to travel the length of the ship in foulest of weather. On its overhead and sides could be placed piping and electrical conduits out of the weather.

The second solution, and the one being employed at Long Beach, is to insulate deck steam piping with a non-absorptive material. We use Foemglass sectional insulation. This is a material which meets all requirements for insulation. However, because of its nature all contact surfaces must be cemented together with a waterproof adhesive. The adhesive which we have been using is not adequate in that it does not set up quickly enough nor is strong enough for our purpose. However, we have discovered an adhesive called Turf-Bond, manufactured by the Goodloe E. Moore Company of Danville, Illinois, and which apparently will cohere any two substances.

If Turf-Bond delivers as well as we expect it will solve still another problem, that of attaching insulation fastenings to surfaces to be insulated, such as ventilation ducts.

This material has not received BuShips approval. However, we have requested evaluation from them.

As we all well realize, refrigeration insulation has been a problem area through the years. This was a problem area during World War II because of the acute shortage of insulators who were capable of applying cork insulation properly. The cutting and fitting of cork to exact measurements, particularly in confined areas requires considerable skill and is time consuming.

The Foamplass and adhesives which are used on tank steam lines seem to be the answer to the refrigeration insulation problem.

We have insulated one complete refrigeration system on a Destroyer with this material and it proved to be satisfactory.

No appreciable savings in labor costs were realized but the material costs were much less. This is an important factor as insulation often costs more than the pipe on which it is applied.

We are also applying Foamplass on chilled water lines, and plan to discontinue the use of cork as an insulating material.

In addition to the chilled water piping, we have many miles of cold water piping such as flushing and fire systems. Present specifications call for the application of blancket type insulation (Amosite) to cold water piping. This is a dusty, time-consuming chore which requires considerable skill to produce a neat appearing completed job.

Instead of cork and blanket insulations on chilled water and cold water systems another material might be used. This is Armstrong's Armaflex. Armaflex is furnished in a variety of sizes up to $2\frac{1}{2}$ " I.P.S., as a long cylinder or tube.

In new installations, this material can be slipped over the pipe, pushed back from the joints for sil-brazing, and then returned to position. A fitting cover is installed with contact surfaces cemented and the job is complete except for painting. Being flexible, the material can be bent around curved piping easily.

On old installations the tube is slit, slipped over the pipe, contact surfaces are then cemented, and the job is finished.

Using the appropriate larger size material, fitting covers can be fabricated easily.

Probably best of all, in cases of national emergency, with skilled labor unobtainable, new employees could be trained to install Armaflex in a minimum period of time.

Another, and even more startling development, is a plastic material developed by the American Latex Company of Hawthorne, California. The material, StaFoam, is applied very simply by spraying, similar to the application of a heavy coat of varnish, with the catalyst being added in the nozzle of the spray gun. Within a few minutes of application StaFoam bubbles up to about 5/8 of an inch, or even thicker, depending on the thickness of the spray coat. It then cures in a few hours. The finished product resembles magnetic insulation in color and feels like it texture.

StaFoam is not intended for use on hot installations. While it will not support combustion it would best be suited for use on cold water piping and ventilation ducts.

Because StaFoam is a new product, and one which offers so many possible applications, I have brought along copies of its literature for each of you who desires them.

In a period of only a few years we may well be insulating all ventilation, fire, flushing and refrigeration installations, with this or a similar material, saving sums which I hesitate to estimate. Equally important is the possibility of being able to apply a completely vapor-proof barrier on all cold surfaces.

These new materials also offer a means of combating one of the most insidious of occupational diseases, Asbestosis, by replacing asbestos as an insulating material to a considerable extent.

Asbestos is a form of asbestos which is coarse in texture and of a varying color from ash gray to brown.

The asbestos which we use is a mineral as much as is the rock in which it is found. Furthermore, its principal ingredient is silicon, which is responsible for the disease which we know as silicosis.

Asbestosis, or silicosis, is caused by prolonged breathing of silica dust. Asbestos, when handled dry, produces vast amounts of silica dust. In new applications the material can be dampened to reduce the amount of dust liberated. However, the specified type of asbestos for use on cold water piping is water repellent. Also material which must be removed from an existing installation is dry and powdery, being an excellent dust producer.

The most apparent symptom of asbestosis is lethargy - or a lack of vitality. What we suspect to be lead in the posterior might well be asbestos in the lungs. During 1936,

eleven deaths from asbestosis were reported on the Pacific Coast alone. One insulator died of asbestosis at the age of 29.

Asbestosis is extremely difficult to detect — particularly in the early stages. I know that two of my insulators are now afflicted with this condition. How many more will become afflicted is something which I hesitate to predict. Again, the solution is obvious. Remove the cause by substituting other products, such as mineral and stearate for asbestos wherever possible. However, this will take some doing.

In the meantime, the answer is the wearing of respirators by all who handle asbestos products. To many the very idea of wearing respirator is repugnant. However, a respirator on the face is preferable to asbestos in the lungs.

Therefore, gentlemen, ours definitely is the important and difficult task of providing and installing effective insulating materials aboard Naval Vessels. Moreover, this task must be accomplished without sacrificing our workers in the process.

The End

A Discussion of
Mr. O. W. Meeker's Talk Follows

Mr. Winslow:

Do you know that Poly-Vinyl loses its resilience over a period of time? The fittings, you can pull them right off. They depend on resilience to make the joint and we have removed four or five thousand of them.

Mr. Stecher:

We are hoping to clear this up in the months ahead.

Mr. Will Jr.:

That plastic tube will be bent in the same way?

Mr. Stecher:

The pipe is being bent with hot water or steam.

Mr. Lord:

We use a lot of them and we get better results with hot air.

Mr. Stecher:

Any more questions? Alright then we will show this film on plastic piping for washdown systems.

Mr. Chamberlain:

Gentlemen, we are fifteen minutes behind schedule. Thank you very much, Mr. Stecher, for a very interesting presentation.

Our next speaker this morning will be Mr. Meekor from Long Beach Naval Shipyard, who will speak to us on "Pipe Insulation Processes and Procedures."

Mr. Meekor!

Mr. Stecher:

I missed one point what was the complaint about urethane?

Mr. Meekor:

It is too rigid.

Mr. Stecher:

What do you mean by too rigid?

Mr. Meekor:

It's just that it has no flexibility, it cracks. And is a poor insulating material.

Mr. Stecher:

It's one of the best insulating materials as regards the high coefficient of heat.

Mr. Meeker:

It's very good in the laboratory and on paper, but when you install it takes a lot more time and breaks in shipment.

Mr. Winslow:

We never use it, we have had trouble with it.

Mr. Chamberlain:

Olen, there is one thing you mentioned that interests me and that is Stafoam you indicate that it is only for cold surfaces. Do you know if any research is being conducted to see if it can apply to a hot surface in a spray manner?

Mr. Meeker:

No, I went over to the Union Oil Refinery about three weeks ago looking for new material. It doesn't work out good on hot pipe.

Mr. Chamberlain:

How would it work on a heated space such as on a DL class vessel?

Mr. Meeker:

It would not work very good in there. It is not approved for that.

Mr. Chamberlain:

Have you any literature or information on it?

Mr. Meeker:

A small amount in my hotel, I think. I will bring it over if I can remember it.

Mr. Chamberlain:

If you don't, just drop it in the mail. I would appreciate it. Thanks.

Mr. Ferris:

George, if you will contact DuPont Company you will get all the

Mr. Ferris:
(Continued)

information. They developed this type of insulation.

Mr. Chamberlain:

Have you used it, Larry?

Mr. Ferris:

I have seen experiments on it.
I haven't used it.

Mr. Stocker:

It will not stick to metal, I saw it tried on the inner and outer panels of voids, it rises up like yeast and fills up the whole void. I don't think it will stick to metal.

Mr. Meeker:

The particular stuff we are trying out is sticking. It may not last, I don't know about that.

Mr. Chamberlain:

How about your shop, Mr. Lucas?

Mr. Lucas:

We've been using the conventional type of insulation.

Mr. Ferris:

In one part of Mr. Meeker's speech it was very interesting due to the fact that a couple of years ago this Asbestosis in the workers was quite a scare. As you know, a person using this material has to be X-rayed at regular periods, they will tell him to come back in a much shorter interval. This was brought to the attention of Union leaders. Fourteen out of one hundred and twenty-six had Asbestosis, and possibly by now a higher percentage have it. Attention was brought sometime ago to the high rate of sick leave for lung and throat trouble, and the Hygiene Officer, said there was nothing to it. Then we had a letter from the Bureau. The order is for them to wear masks, because fourteen people have brought suit against the Government. Now, if you haven't told these people to put on masks, you are more or less the cause of their trouble. You are

Mr. Ferris:
(Continued)

knocking the Government case into
a cocked hat.

Mr. Stocker:

I go along with that.

Mr. Ferris:

I think everyone, who has people doing
this type work, should warn their people
regarding the handling of this material.
With the proper handling of it on the job,
and it has always posed a very big problem,
because the men don't want to wear the
masks, or get this dread disease. It is
difficult to protect them. After a couple
of years of mandatory wearing of masks I
think they should realize the danger. I
think everyone ought to enforce the wearing
of masks. Don't forget this is something
that injures people's health. We should
do something about it-and fast, and I am
convinced that what we are doing is not enough.
We should not have people handle this
material without protection.

Mr. Meeker:

Any more questions?

Mr. Chamberlain:

If there are no more questions, this
would be a good time for a short recess.

Mr. Whitthorne:

Just a minute, George, please. In behalf
of myself and all the other Master
Mechanics present at this, one of
the most wonderful conferences given
in any Shipyard - in fact I have
never seen anything like what you have
done, I wish to express our appreciation
for your efforts.

Mr. Chamberlain:

Thank you, Mr. - We always want you to
have pleasant memories of us here in
Boston, remembering that the Boston
Naval Shipyard was host to the first
Pipe and Copper Master Mechanics', Conference.
Let us hope that we will soon meet again.

COPY

FROM
ARCHIVES BRANCH
GSA REGIONAL OFFICE BUILDING
9th & MARKET STS. ROOM 1350
PHILADELPHIA, PA 19107

Record Group No. 181
Additional Information RECORDS OF
INDUSTRIAL MANAGER, 4TH
NAVAL DISTRICT

Exhibit 17

EXHIBIT

OE-742

NAVORDINST 5100.21
DNI
7 Jun 1958

DEPARTMENT OF THE NAVY
Bureau of Ordnance
Washington 25 D. C.

NAVORD INSTRUCTION 5100.21

From: Chief, Bureau of Ordnance
To: Distribution List

Subj: Safety Handbook for Pipefitters

Ref: (a) NAVORDINST 5100.13 of 10 Aug 1956, Subj:
Industrial and General Safety and Industrial
Hygiene Manual

1. Purpose. This instruction promulgates a Safety Handbook for Pipefitters. This is one of the safety handbooks to be issued in accordance with Chapter 4, paragraph 3 of reference (a) as an aid in the safety indoctrination of employees so that accident prevention can be further improved in the Naval Ordnance Shore Establishment.

2. Background. A number of activities have suggested that the Bureau issue safety handbooks for trades rather than have each activity develop its own similar set of such handbooks. Smaller activities, in some cases, lack the facilities for the development of such handbooks. A set of the more common handbooks has been developed in loose-leaf format with the intent that stations desiring to use them can modify them to suit local conditions. This is one of a set of fifteen handbooks being issued at this time.

780600

2340 CCF907

SAFETY HANDBOOK

3. **Concern:** The safety rules listed in this handbook are, if necessary, revised in number and are not believed to cover fully all applicable safety rules. This handbook does not supersede or replace any existing safety regulations but is provided as an additional safety indoctrination and reference training aid.

4. **Action:** Prior to making distribution of this safety handbook, addressees are requested to review the handbook and make any pertinent additions and changes as determined, depending upon local conditions.

R. E. WITTHOTON

G. P. ENTHALT
By direction

DISTRIBUTION:
SACN, Part I (Rev. 2)

K12 (Charleston, Ft. Moultrie, Fort Bragg - 2 copies; others 3 each); K1C13 (copy), K1D5 (copy), K1H3 (copy), K1J
(copy), K1B10 (copy), K1D7 (copy), K1W, O, only 3 copies), K1A12 (copy), K1G5 (copy), K1G6 (copy), K1I
(copy), K1A11 (copy), K1G3 (copy), K1G4 (copy), K1I
(copy), K1A10 (copy), K1C13 (copy), K1H3 (copy).

Copies in: (2 copies each where service area indicated)
AR11(O - CL), ZD11 (Individually initialed), ZD11 (Washington only)
K1A1C7 (one [Code EAST] copy) (1 copy), K1A1C6 (one [Code AD] copy) (1 copy), K1C13 (Code RA) (1 copy).

11

NAVORDINAT 5100.21

Request for additional copies of NAVORDINAT 5100.
It should be submitted to either the General Supply De-
pot, NSC Norfolk or the General Supply Depot, NSC
Galveston.

"SSO"

SAFETY HANDBOOK FORwards	
<p>There are certain fundamentals to accident prevention that must be observed if one is to have a safe operation. Regardless of what the assignment may be, there are safety factors that should be considered. Personnel should use this information on the job for safety in any work they do. A good example is working from ladders and scaffolds. Injuries after falls have been numerous as a result of improper procedures. One of the benefits of a smooth efficient running operation. One feature of a good program is the shop stand-up meeting. These subjects should be considered in every unit as topics for these conference type meetings.</p>	<p>MAINTAINING STANDARDS</p> <p>GENERAL TOPICS</p> <p>Reporting of injuries. (Reference HCPI (M-5) AN injury, no matter how insignificant, must be reported immediately to the Medical Department. Your experience may prevent a repeat exposure because you learn from the experience of others.</p> <p>Compensation Claim Procedure. (Reference HCPI No. 2, Part 42) The Safety and/or Personnel Office can assist the injured in claim procedure. However, definitely make sure it is presented to establish a bona-fide claim.</p> <p>Obtain permission on a NAVFACOS 107 (Dispensary Permit) from your supervisor before going to the dispensary, Naval, or Public Health Hospital.</p> <p>Complete a CA-1 (Employee's Notice of Injury and Original Claim for Compensation and Medical Treatment) with all details of HOW, WHEN, and WHERE the accident was experienced and include names of witnesses.</p> <p>If the injury requires additional treatment a CA-2 (Official Supervisor's Report of Injury) should be completed.</p> <p>If the injured chooses compensation in his favor instead of a CA-4 (Employee's Claim for Compensation on Account of Injury) should be filled out. If augmented compensation is desirable for dependents a CA-4a (Amendment for Augmented Compensation for Dependents) should be completed at the same time.</p> <p style="text-align: right;">18 18000</p>

SAFETY HANDBOOK**APPLICABLE SAFETY RULES**

Electrical Appliances. (Reference OPNAV 3001 Chain-of-Command, para 105) The Undersecretary, Laborer/worker, provides electrical devices, as look for their seal of approval. Provide ground for devices as required by current instructions. Never overload circuits. When in doubt call an electrician. People working in and around voltage should be aquainted with first aid in case of shock. Policies may be obtained from the Medical Department for training purposes. Remember that water is not conductive to found electrical working conditions and if combined with low or high voltage may prove disastrous.

Compressed Air. (Reference NAVORDINST 5100.12, page B-5) Eye injuries reported from the application of compressed air. Always remember to wear safety glasses with side shields. Air embolisms are possible from improper exposure to high pressure air. Use with respect, always. Proper storage facilities can prove disastrous if not controlled properly, particularly in the case of high pressures. The lines should be secured so prevent possible whipping when a break occurs. Air lines regulators should have a filter in feed lines to prevent installation of foreign materials.

Acid - Toxic Hazard. It is the fumes from these substances that are dangerous. From an explosive and installation hazard each has hazardous qualities that can be dangerous. An individual (hygienic) should determine their value. It is advantageous when working with acids to have copious amounts of water available.

Acids have tendencies to be explosive both in large and small amounts (i.e., batteries). Ventilation is a must

NAVORDINST 5100.12

where carbon tetrachloride or methyl alcohol is used. These toxic substances are usually controlled by a Toxic Control Committee or are not allowed.

Hand Tools and Portable Tools. Inspect all tools for defects. If the tool is open for inspection, pay close check closely for metal fatigue. Report all defects to prevent additional expense. Tag and indicate defects. Use the tool for the specific designed application only, and within its capacity. Get permission and instruction before using a new, strange device. Emphasis can not be too great in off-the-job, hobby work. In the use of safe tools, which平安な工作, consider what safety precautions are necessary. Use references before making plans and before giving a stand-up meeting on the subject.

Ladders. (Reference NAVORDINST 5100.12, page B-6) Inspect the ladder for defects and note that the last date of inspection be current before checking out. Use a ladder for reaching an object only within the safe distance of reach. Never over-reach. Check the safety shoes for the proper design to meet the needs of the surface used for climbing (i.e., split for sole, rubber for cement, etc.). Never carry material on a ladder. Use a hand line. Metal ladders should be班長 responsibility around electrical. Off-duty jobs injure to themselves occur fairly serious results.

Lifting and Carrying Operations. Plan your work with consideration for lifting lifts. It must be a natural lift allow for room to move little with your back and not your back. Walk across a mechanical table if possible. If you must carry material manually keep it close to your body. Whenever possible use a mechanical lifting device to prevent possible injury. Injuries from improper lifting

789602

SAFETY HANDBOOK <p>is prevalent off-the-job and on-the-job. Using the proper methods is a good preventive in any safety program.</p> <p>Scaldding. (Reference NAVORDINST 5100.13, page 8-18) Scaldding can prove to be an accidental preventable, if we properly. In many instances ladders are used where scalds should be installed. This consideration should be made. In on-the-job place, Materials left on scaffolds have proved to be accident makers. Take extra care; but good housekeeping is also an excellent accident preventer. Use your safety manual and other references materials when making plans for work or stand-up meetings on this subject.</p> <p>Wire Ropes and Manlift Usage. This gear should be included in periodic inspections. Do not take a chance. Inspect it yourself. This equipment will deteriorate quickly when exposed to the elements. It needs your care as an source of prevention. There are many good references on this subject such as the National Safety Council Safe Practices Pamphlet and Cards and ORNAV 3101. Use them in planning your stand-up meetings on this subject. Falls caused by deteriorated ladders have resulted in serious injuries. Work-end home painters, house ladders, and hobbyists in general should be cautioned on this exposure.</p>	NAVORDINST 5100.21 <p>VEHICLE EQUIPMENT LICENSING REQUIREMENTS</p> <p>Only authorized trained operators may be assigned to vehicle equipment. Qualifications for licensing are given in MCNP 1500 and DOD 1230. Material handling licensing should be outlined in the Station Safety Manual. Training and refresher training is a requirement for all vehicle operators. All material damage and physical injury must be reported immediately. Serious industrial injuries are reported to the Bureau as well as active duty individuals accidents resulting in material damage (NAVORDINST 5100.12). Notify your supervisor of any change in your operating status whether on-duty or off-duty. Particularly the area of personal physical conditions.</p>
---	--

780693

SAFETY HANDBOOK**PIPERITERS**

The greatest exposure of this trade is that workers come in contact with materials under high pressure such as steam and air. Due to unusual exposure to such conditions at waterplants, sewerage plants, heating operations, etc., the worker must observe complete industrial hygiene practices for his own welfare. Many of the work assignments consist of unusual application in loose spacers, installation, storage, and materials handling. This should alert the worker to the proper techniques in lifting, many times the worker finds himself as assignments that call for his own judgment. If the work is planned with the supervisor and the basic safety concepts are reviewed before going on the job they aid in preserving the worker's safety.

Eye Safety. Wear correct glasses for every job where there may be danger of impact, flying objects, sawdust, dust, glass, strong chemicals, or harmful light rays. Wash chemicals from the eye with large quantities of clean running water, blinking the eyes repeatedly. Then get a doctor immediately. If dust or small particles get in your eyes, do not rub them. Get prompt first aid. Allow only a doctor or qualified nurse to remove anything from your eyes.

Bench Work. Keep your bench clean and orderly, and the floor free of shipping and handling hazards; don't let materials or debris accumulate to become a fire hazard or breed vermin. Use a brush to clean off the bench top. Tools should be placed where they cannot fall off the bench easily; have a place for each tool and keep it there. Protect the blades of sharp or pointed tools. Avoid using tools with unsharpened heads, cracked or broken handles.

HAZARDIST 510021

or without handles. Use only wrenches of the right size; keep jaws sharp and in alignment; keep your vice in order.

Always use the proper tool for the job - never use makeshifts. Do not stand long materials against the bench or the wall where the may fall easily. Guard against injury to others when handling long materials; place or carry to prevent them from flying directly at your feet. Wear protective clothing. Protection is a last line of defense; wear safety glasses when doing heavy work. See that the vines, sawdust and other sources of light at your work give off as little heat as possible. Wash hands with soap and water. Wash your hands and face thoroughly before eating and before leaving the workplace for breaks.

Electrocuting and Insulating. Gloves should be carried in a pocket, pocket them. When working with around piping, pull them always; never leave your hands fastened to a hook or anywhere else around the neck or there is no danger of dropping when working overhead. When working, never leave tools, always from your or shoulder, as tools or insulating surfaces if the spread break. When building, insulating materials on piping, always bend ends over so that hand does not injury and catching. Never leave sharp ends of wire; always bend them over so sharp ends won't penetrate. When



43004

SAFETY HANDBOOK

cutting wire from coils, hold and strive firmly to prevent end striking you to your greater force. Discards and material should be wired to piping or other fixed objects to keep them from being kicked or rolled off staging or gratings. Do not allow materials in passageways or lances. Do not spread drop clothes over hoppers or misplaced floor plates or gratings where there would be danger of anyone stepping. Remove excess materials to project containers. Observe good housekeeping at all times. When handling timbers, fiber glass, or unbroken sections, tight-fitting leather gloves must be worn to prevent injury to hands.

Cutting Oils and Compounds. You may be treated with fresh, pinhole, or bolts if you permit your skin to become saturated with dirt and oil. When splitting wood at night, scrub your hands and arms thoroughly with soap, warm water, and a soft brush. After each washing rub lanolin or petroleum jelly or other ointment on your skin to prevent chapping. Keep a soft brush and a soft towel handy for your arm use. Do not wipe your hands with waste; metal particles on your skin or in the waste may scratch you.

Propane Gas. Leaks in propane gas lines are dangerous.

Liquefied Oil Gas equipment to which this gas is supplied is equally dangerous, as combustion, fire, or explosion can readily occur. In order to prevent this be alert constantly for any hazards due to tanks, faulty equipment, or malpractice. All shapes and areas using propane gas must inspect and train their personnel to the precautions and safe practices in follow. This gas is 1-1/2 to 2 times as heavy as air and thus tends to settle low levels and will, for instance, progress through a system of franchises (allowing to escape has a shop). Therefore, use proper precautions against fire in handling this gas.

NATIONALIST 3100.21

Respirators and Hydrants. Be sure that you understand how to use respirators and hydrants. Check what date on which the mask was inspected at frequent intervals. Gas mask cartridges which are one year old or which have been used for a total period of one hour must be immediately replaced. The most work around ammonia tanks without a mask and without a second person nearby. Wear rubber gloves and approved respirators before handling ammonia fertilizer or caustic. In the event that any of this material comes in contact with the skin, flush freely with water. Do not make any adjustments unless you are sure that there will be no danger to yourself, your fellow employee, or the equipment.

Silver Braizing. Only licensed braizers who have passed a qualification test are permitted to do silver braising. Be sure there is good ventilation. Wear eye protection. Filter lens, either pink or green, will give protection against bright light and help you do a better job.

Handle compressed gas cylinders carefully. Cylinder heads shall not be dropped, struck or allowed to strike each other violently. Due gas cylinder shall be cleaned, transported and used in an upright position only. Cylinder shall be capped at all times when not in use. Do not permit oil or grease to come in contact with oxygen cylinders, valve, regulators, or fittings. Open shall not be used after cylinder after

16903

SAFETY HANDBOOK

The internal pressure has been reduced to 25 P.S.I. (psig). Do not use acetone to prevent an ascent of gas. Do not use oxygen or any fuel gas if P.S.I. (psig) is zero. Do not use oxygen or any fuel gas from a cylinder without an approved pressure reducing regulator. Torches and hoses shall be disconnected from cylinders when not in use and cylinders shall be emptied. Gas torches and hoses must never be left unattended in confined spaces. When leaving a compartment, tank, or other confined space immediately remove the torch and hoses to a well ventilated area.

Machinery and Equipment, General Practices. Only authorized and qualified employees are permitted to operate machines and equipment. The use of all guards are in place and properly adjusted before starting machine. Keep tools, machines, and working space as clean as possible. Throw hot stock or scrap scrap metal. Clean metal beds, chips, and scrap material from the machine and put it in the proper container. Do not have oil scrap with your bare hands. Do not use an air hose to clean the machine; use a brush. Clamp material securely to machine before starting the machine. Do not attempt to oil, adjust, or clean any part of a machine while it is running. Do not distract the attention of others engaged in operating equipment.

Always remove check wrenches from chuck immediately after you use them. If left in the chuck they will fly out when the machine is started. Loose clothing, rings, watches, and neckties should not be worn around moving machinery. Do not lean over the work area while working. The work bench over the work area should not be caught in moving parts, so that your clothing may be caught in moving parts. Stop the machine before attempting to pick up tools or other objects lying near or in the path of moving parts. Always shut off the power before attempting to remove stock or jammed pieces of material from a machine.

NAVORDINST 5100.21

Pipe Threading Machine. Wear eye protection when operating a pipe threading machine. Tighten pipe securely in the chuck and remove check wrench before starting the machine. Do not run your fingers or hand over the pipe threads. Use a brush to remove chips. If you are not familiar with the machine, get instructions from your supervisor before attempting to operate it.

Power Hack Saws. All work shall be properly secured before starting the blade. Keep work in piles and keep work area as neat as possible. Be sure all belts and pulley are greased. Food protection should be worn when operating this equipment. Keep coolant off the floor. When handling heavy materials use a hoisting device.

Cassette Solvents. Use and handle solvents will cause severe burns to the eyes and skin; therefore, close-fitting rubber aprons and gloves or face shield and rubber gloves shall be worn. Rubber aprons and rubber boots should also be worn when handling caustic solutions in quantity. Do not wear when handling caustic solution in quantity. To avoid violent spattering when making solutions, add caustic slowly to the solution and stir constantly. In case of accidentally splashed flesh the affected parts are thoroughly with water, then report to the dispensary.

Acid. Use same protective equipment as for caustic acid. Wear material sturdy to avoid splashing. Be particularly careful when dipping hot acids into cold acid. When mixing acid solution always pour the acid into the water. Never pour water into acid. Pour slowly and stir constantly. Thoroughly wash and scrub containers as soon as they are emptied. When dipping current pipe or coils do not submerge both ends on the pipe at the same time.

11000000

SAFETY HANDBOOK

Lead. When pouring or working with hot lead wear an apron, glasses, and eye protection. If a lead pot is used in a confined area, make sure good ventilation has been provided. Do not leave molten lead unattended. Use only approved tools when handling molten lead. Wash hands moisture or water gets into the molten lead. Wash hands thoroughly after handling lead, particularly before eating. This protection also applies when using a lead-based paint or white lead pipe sealant.

Wrenches. Inspect wrenches for sprung, cracked, or battered jaws. Do not use a wrench that does not fit the nut or bolt head properly. Keep wrenches free from oil or grease. When using an adjustable wrench, place the jaw on the side facing you and apply pressure to the wrench. Brace yourself to avoid losing the wrench. Brace yourself to avoid losing the wrench all or the nut from your hand or a hammer. Do not hammer a wrench. If it becomes necessary to tap a wrench or other bolt hammer, Do not use a hammer or pipe to extend a wrench handle for added leverage. Fit a longer wrench. Do not use a thin -ring wrench fit.

Abrasives. A sheeter due to injuries labeled. Wear an approved dust respirator for protection against this hazard.

Black Saw. Tighten blade firmly to prevent buckling. Apply pressure on the forward stroke only. Pull the saw back slightly to protect the teeth. Secure all material before attempting to make a cut. Keep both hands on the saw to steady it and prevent chattering. Wear your safety goggles when using a back saw overhead.

HACKSAW BLADES

Use the following table to determine the proper blade for the job:

Use	Teeth to Inch
Bolt solid metal	14
Tool steel, iron pipe, hard metal	18
Drill rod, sheet metal, tubing	24
Thin metal and tubing	32

Power tools shall be used only by employees familiar with and properly instructed in their use. Hose shall not be laid over tailings, slopes, scaffolding, or power supply in such a manner as to create a tripping hazard. Air pressure shall be shut off at the manifold and pressure released from the line before disconnecting the hose from the line. When using pneumatic tools to keep the saw hand levered away from your face. Eye protection shall be worn at all times when operating power hand tools. Do not use portable power tools in an area where flammable vapors may be present. Contact your supervisor if in doubt. As with

SAFETY HANDBOOK

all revolving tools, hence clothing that may catch in the machine should not be worn.

Penistole Electric Tools. Use only equipment that is in good condition. Take good care of it. Be sure that the tool is properly balanced. Do not overstrain the tool, than overloading the motor. Whenever a portable electric found in the presence of flammable vapors or gases, white it is displayed for such uses.

Portable Electric Tools. Use only equipment that is in good condition. Take good care of it. Be sure that the tool is properly grounded. Do not overstrain the tool, thus overloading the motor. Never use a portable electric tool in the presence of flammable vapors or gases, unless it is designed for such use.

Report the following unsafe conditions: defective or broken insulation on cord, improper or poorly made connections to terminals, broken or otherwise defective plug, and loose or broken switch.

Report the following unsafe conditions: defective or broken insulation on cord, improper or poorly made connections to terminals, broken or otherwise defective plug, and loose or broken switch.

DIRTY OIL STONES may cause the tool to slip and result in cut (figere). Clean the stones by placing them in a pan and heating it; wipe the stones dry and clean while hot. Do not try to sharpen tools on any oil stone. Oil stones measured in boxes are usually more stable.

Mounting, Gripping, Wheeles on Spindles. Inspect the wheel for flaws and make the *spur test*. Clean the bearing surfaces of wheel, flanges, and spindle so that the clamping pressure will be evenly distributed. At the speed of the spindle to make sure that it is not running too fast for the type and size of wheel. Make sure that the hole in the wheel bearing in the right side of the wheel is clear of any foreign material.

MARCH 1960 21

spindle (either too small or too large). Use sleeves that are recessed and large enough to clamp the wheel well toward the circumference. Use composite washers between the flanges and wheel that are large as the bearing (1/8 inch), but no thicker than 0.125-inch thick; 0.160 per. (1/8 inch), has a thickness of 0.125-inch thick).

Machinery Guards. The importance of guards may be illustrated as follows. Picture yourself slipping, throwing out your hand to catch yourself, and flinging it resting on a gear covering some piece of moving machinery. Think what might have happened if someone had left their shirt end of place, and reflex action caused the machine to catch the hand.

Always keep your machine clean and always replace the saw blade when it is blunt. Before starting work always make sure that all guards are securely in place. If you notice that a guard has been carelessly left off any machine notify your supervisor. If you find that any guard is broken or defective advise protection, safety, your supervisor.

Traveling Frozen Pipes Inside Building.—Never run open flame to thaw frozen pipes inside of a building. Even though the flame may not cause a fire, its sudden heat on metal may cause the pipe or pipe fitting to break and flood the premises with water. Hot water

Acid and Coal-tar Pipe Lines. Opening Flanged joints.
When gaskets and rubber sleeves. Skids all the pipe controlling the contents of the pipe. Drain the pipe. Put a flange cut from a piece of sheet lead over the flange. Wrap your face will have the level of the pipe. Remove one layer before first three layers, the others slightly.

၁၂၅

2

SAFETY STANDARDS

until the acid or caustic dries. If fingers stick over them by driving a wedge **(fig. 1)** through the shield and bite the joint.

with the acid or caustic drive. It flanges a wedge (figure) spike sharply through the shield and holds the joint.



Hazards and Warning Signs. Before starting any unequal berths or where there are always placed complete and warning signs. Barely encircle the street operator or office place. Place necessary

To protect the westbound traveler, - who, during night and because of the darkness, is also perceptible to the pedestrian, stations a flagman with the traffic police who will give additional warning of dangerous traffic. At night use bright red lanterns near the danger signs and flags. All lanterns near a

Digitized by srujanika@gmail.com

open trench or other excavation must be securely anchored to prevent their falling into the excavation.

Ballditch. A steel and paring suggestion. When driving a wedge through the shield and hole the joint.

Trenches. Do not jump into a trench; sit on the shoulder and slide in. If you fall in, never than J get out. If you are in a trench, never get out of it except, look both ways for traffic danger. Keep a safe distance from trench workers, to avoid danger of striking them with tools. Keep the shoulders of the trench free from tools, materials, debris, and loose earth. Possible, keep the soil between you and traffic. If the walls of a trench become sharp objects, remove them. If a trench must be crossed when the edge of trench to avoid the shoulder. Use a proper line.

Minimise cover. Place traffic pencils around the main entrance; at night, set flattered lanterns. Have a helper guard openings of all fixtures. Test the methods for peace by approved method. If dangerous place are present or there is a deficiency of oxygen, ventilate the mishap. By either wind walls, remove adjacent masonry covers, or forced ventilation. The last method is...

四

६३८

SAFETY HANDBOOK

sure that air delivered to the manhole is not contaminated by motor vehicle exhaust gases. After ventilation, again test the manhole. If the air content is questionable, enter it only under specific orders of your supervisor after putting on respirator protection and a lifeline. Have a helper stationed at the manhole entrance holding the life-line in his hands.

Handling Pipe, Truck and Trench. Stand on one side when pipe is being unloaded from a truck lowered into a trench. Before operations are begun, carefully inspect the ropes to be used, for defects that might cause falls of materials and injury to persons. Bad burns are caused by allowing the rope to slide through the hands. Wear gloves, and take great care to avoid straining. Always block the pipe to prevent it from rolling. When carrying pipe with others, make sure that all workmen understand the signals for lifting and lowering. These are done best with good teamwork. Take great care in handling threaded pipe - the threads are always sharp and cut the flesh easily.

77
G3
+1
12

Exhibit 18



SAFETY Review

In This Issue:

SAFETY EQUIPMENT CONTROL
WHO IS RESPONSIBLE FOR SAFETY?
SUCCESSFUL FOOT PROTECTION PROGRAM
BULK PROPANE SYSTEM
JIG FOR BUILDING PIPE STAGING
ASBESTOSIS
SAFETY CAPSULES



Safety costs money—lack of safety costs infinitely more. We must pursue an effective, efficient safety program with the same vigor we pursue an effective, efficient program of shipbuilding, conversion and repair.

A handwritten signature in cursive ink that reads "R.K. James".

RADM R. K. JAMES, USN
Chief, Bureau of Ships

NAVY DEPARTMENT
OFFICE OF INDUSTRIAL RELATIONS
WASHINGTON, D.C.

NAVEOS P-52

OCTOBER 1962

VOLUME 19 NO. 10

Use of funds for printing this publication approved by the Director of the Bureau of the Budget 4 May 1960.
For sale by the Superintendent of Documents, United States Government Printing Office, Washington 25, D.C.
Single copy, 18 cents; domestic, \$1.25 per year; 50 cents additional for foreign mailing.

DEFENDANT'S
EXHIBIT
Buffalo Pumps

ASBESTOSIS

Prepared by Capt. H. M. Robbins, MC, USN, and W. T. Marr, Industrial Hygienist, Long Beach Naval Shipyard

IN 1930, the first cases of asbestosis were reported in the United States. A few years later (1934), amosite, a type of asbestos, was found to be comparatively light in weight and an excellent insulator for shipboard work. By 1937, manufacturing problems were solved and the material was used productively aboard naval vessels. During the war years, shipyards had a great influx of employees in all trades, and pipe covering was no exception. Asbestos was used extensively. In 1945, a medical survey team noticed the dusty working conditions of pipe coverers and a study was made of the working environment of these employees in four shipyards. High dust concentrations were found at the time and X-ray examinations given to over 1,000 pipe coverers. Only three employees, each with more than 20 years' experience in working with asbestos material, were found to have asbestosis. This low incidence of disease and the extensive number of years the affected employees worked in the material led the investigators to conclude pipe covering to be a relatively safe operation in shipyards. Exhaust ventilation and respiratory protection were still recommended as good practices. The "extensive years" gives us an extremely important clue to watch.

Medical evidence indicates the requirement for many years of exposure to develop asbestosis.

Shipyards have two work areas, the insulation shop and aboard ship, where there is a potential exposure to asbestos fibers. Pads, like small pillows for shipboard fittings, are made in the shop. Here asbestos cloth is cut to size and filled with a type of asbestos called amosite. Recently, in this shipyard, fibrous glass has replaced amosite as the filler for these pads. Aboard ship, a great variety of insulation is performed. Insulation blocks are shaped with a saw, pads are applied to fittings, insulation cement is applied to blocks and covered with asbestos cloth. These, and other operations, take place in nearly all compartments; however, most work is done in the machinery spaces. By far the greatest potential exposure to asbestos fibers occurs during ripout of old insulation for ship overhaul or reconversions.

There is still much to be learned in the area of measurement and evaluation of asbestos fibers in the working environment. The general feeling is that asbestosis is caused by breathing relatively long fibers (10-25 microns) and that fine asbestos dust is relatively inert. At this time, the recommended maximum allowable concentration is 5 million particles per cubic foot. Control of asbestos dust and fibers is relatively easy in the pad shop. A water supply pipe, filled with small holes, is located directly over the asbestos cloth on the end of the cutting table. As the cloth is drawn onto the table, the cloth is dampened. This cloth remains damp throughout the process of filling, sewing, and installing pins in the pads. Additional exhaust ventilation has been installed in the shop and is now operated constantly during working hours. Dust studies were made while dry cloth and amosite were in use and the ventilation off. These counts were generally in the range of 5 to 20 mppcf. Under improved conditions, the count is generally below 1 mppcf.

A pipe coverer's working environment on board ship is constantly changing, making it difficult to obtain an average dust exposure. Almost any concentration of dust and fibers can be found under varying conditions. The highest counts, of course, are during ripout where 200 mppcf are not uncommon. Due to the constantly changing work positions and areas of pipe coverers, adequate ventilation is not possible. The worker's best protection is to avoid careless creation of dusty conditions, use damp material when possible, and wear respiratory protection constantly. There is, at present, no known cure for asbestosis. Once a person has contracted the disease he has suffered a loss of health which cannot be redeemed.

For an educational program, a tape recording was made of an interview with a former employee who is now receiving disability compensation for asbestosis. This recording, along with discussion, has been presented on several occasions to encourage employees to use every means to protect themselves from exposure to asbestos fibers. Films are also periodically shown on the use of respirators.

Exhibit 19

NATIONAL CENTER FOR
URBAN AND INDUSTRIAL HEALTH
200 EAST CENTRAL PARKWAY
CHICAGO, ILLINOIS 60601

REFFER TO:

30 July 1968

Vice-Admiral L.B. Brown
Chief, Bureau of Medicine and Surgery
Navy Department
Potomac Annex
23rd East Street, N.W.
Washington, D.C. 20390

Dear Admiral Brown:

As you know the Occupational Health Program of the U.S. Public Health Service has been very active in gathering environmental and medical data on the occupational hazards of asbestos. One of our grantees, Dr. Irving Selikoff of New York University, has recently completed a study of non-insulation shipyard workers' exposure to asbestos. Dr. Selikoff reports he has some very interesting data and has requested that we arrange an informal meeting with your Department and the U.S. Department of Labor to discuss his findings.

My Assistant Chief, Mr. Stanley Reno, discussed the possibilities of a meeting on August 29, 1968, with Lt. Cdr. Barboe of your staff; who suggested that we formally request that a small meeting be held at 23rd and Constitution, Building 7, on 29 August 1968. The meeting would probably consist of about six people; including Dr. Selikoff, Dr. Lewis Cralliey of the Occupational Health Program, a representative of the U.S. Department of Labor, myself and appropriate members of your staff. The time and other details of the meeting can be arranged between Lt. Cdr. Barboe and Mr. Reno providing this proposal is satisfactory to you.

We are looking forward to a meeting with your staff and feel that an exchange of information will be of mutual benefit to all concerned.

Sincerely yours,

Murray C. Brown
Murray C. Brown, Med. Dir., USPHS
Chief, Occupational Health Program

B 300137

Exhibit 20

732

LCDR S. H. BARBOO, MSC, USN

5 Dec. 1968 5 Dec. 1968

73

Vice Admiral
R. B. BROWN

Newspaper articles appearing on shipyard asbestos workers

Admiral Brown telephoned to relate information he had received at the CNO's Conference of this date concerning Admiral Felt's (ComDevShips) inquiries concerning articles appearing in the Washington Post and The New York Times. According to Admiral Brown, the articles have put the Navy in adverse publicity in that Doctor I. J. Selikoff of Mount Sinai Hospital, through the news media, stated that he has warned the Navy and other Federal departments of his findings relating to the unusual incidence of asbestos among shipyard asbestos workers. The newspaper articles stated that the Federal agencies including the Navy have not publicized the hazards. Admiral Brown requested a complete background search and medical thinking on the subject of asbestos; and a conference concerning this matter is to be held at his office at some time on 6 December. Admiral Brown wants a defense for why the naval shipyards were not alerted to the unusual hazards associated with asbestos and desires to know what control measures are being utilized.

6 December 1968

On this date, a meeting was held with the Surgeon General, VADM R. B. Brown, MC, USN; CAPT L. K. Rossewinski, MC, USN; and LCDR S. H. Barboos, MSC, USN. VADM Brown was briefed on the medical content of a meeting of representatives of participating agencies held at NIMED on 29 August 1968; and was apprised of current policies and control measures and research concerning asbestos exposure concerning Navy employees. VADM Brown requested that a brief letter containing this information be drafted for his signature to the Secretary of the Navy.

12/10/68

Assistant Chief for Research and Military Medical Specialties

FILE M & S GROUPS B 30014\$

17

Exhibit 21

UNITED STATES GOVERNMENT

DEPARTMENT OF THE NAVY

*Memorandum*6101C:EO:tdl
DATE : 9 December 1968
Ser 1105

FROM : SEC 6100

TO : SHIPS 07

SUBJECT : Hazards of Asbestos

Ref: (a) Article entitled "U. S. Warned of Asbestos Peril" in the Washington Post, Wednesday 4 December 1968
 (b) SHIPS 072C Memo of 4 December 1968

Encl: (1) Analysis of hazard by Cdr. Rosenwinkel, MC, USN
 (2) List of Asbestos Packing and Gasket Specifications
 (3) MIL-STD-769C, "Thermal Insulation Requirements for Machinery and Piping"
 (4) Use of Asbestos for Piping and Machinery Insulation

1. As requested during telephone conversation of 4 December 1968, the following information on the health hazards of asbestos is forwarded. This will supplement preliminary information previously submitted by Code 072 in reference (b).

2. Enclosure (1) contains a statement of the hazards associated with the handling and use of asbestos. This statement was obtained from Cdr. Rosenwinkel, MC, USN of the Bureau of Medicine and Surgery, Occupational Health Division.

3. A survey of the uses of asbestos in shipbuilding disclosed that this material is used primarily in two areas. The first is for packing and gaskets and the second is for piping, lagging, and boiler insulation. From a health viewpoint, the second area is considered to be the more important. A third use of asbestos is as a precoating on diatomite feedwater filters on LSD's. This is a very limited use, however, and is not considered to be a significant health hazard.

4. Enclosure (2) contains a list of asbestos containing packing and gasket materials, together with applicable specification numbers. All of the asbestos in these items is fabricated as cloth, rope, or compressed sheet with binders, so that the items are not friable when they are cut. Thus, these items do not cause dust in shipboard applications. In addition, in many instances, they are received already incorporated in the finished assembly, such as a valve, and do not require fabrication by the shipyard. For these reasons, packings and gaskets containing asbestos are not considered to be a significant health hazard.

5. The most important use of asbestos from a health viewpoint is for piping, lagging, and boiler insulation. Enclosure (3) includes the requirements for thermal insulation for machinery and piping. These requirements include the use of materials other than asbestos. Insofar as possible fiber glass and calcium silicate are used. A detailed discussion of the use of asbestos for these purposes is contained in enclosure (4).

DEFENDANT'S
EXHIBIT
Buffalo Pumps

6101C1000000000
9 December 1963
Ser 1105

6. It should be emphasized that probably the greatest health hazard is caused by airborne asbestos particles during "rip-out" operations, especially on ships built during and shortly after World War II. Asbestos was widely used during that time. Although respirators are specified for personnel engaged in these operations, overall control of the dust problem is extremely difficult so that persons in the immediate vicinity may be exposed.

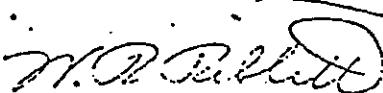
7. Contact was made with the Industrial Hygienists of Mare Island and Puget Sound Naval Shipyards to discuss this problem. It was quite obvious from these discussions that the shipyards have for many years been aware of the hazards of asbestos and have initiated appropriate safety precautions. Insofar as possible, all fabrication work is performed in the shops where adequate safety precautions can be observed. These precautions include controlled ventilation, use of respirators, and wetting down of the material. During "rip out" operations, respirators are worn and ventilation is controlled as far as possible.

8. Mr. Bessmer of Puget Sound recently presented a paper locally on the hazards of asbestos. He agreed to forward a copy of his paper and other documents used by the shipyard for the control of asbestos to NAVSEC. If desired, this information when received will be forwarded for information.

9. The general specifications for shipbuilding allow the use of asbestos as well as other alternate materials. In practice, however, the naval shipyards use fiberglass other materials instead of asbestos as thermal insulation. Exceptions are for vertical runs and for lagging where abrasion resistance is a factor. Private shipyards, on the other hand, still use substantial amounts of asbestos. In many cases, however, the asbestos fibers are bonded or combined with other materials. In these cases, the evolution of dust during installation would be minimal. Also, removal could be accomplished in such a manner that the dust hazard would be minimized.

10. To further minimize the hazards associated with the use of asbestos, the following actions are being considered:

- a. Prohibit the use of asbestos for new construction and repair.
- b. Investigate alternatives for vertical runs and abrasion resistant lagging.
- c. Include in Chapter 9390 "Thermal Insulation" of NAVSHIPS Technical Manual, precautionary measures to be observed in the handling and use of asbestos with emphasis on "rip out" operations.
- d. Insure that appropriate written documentation is made available and is utilized by the shipyards.


W. R. RIBLEIT

Copy to:
SHIPS 072
SEC 6100
SEC 6101B, 6101E, 6105, 6153

BUMED Analysis of Hazard

The U. S. Navy is well aware of the hazards of asbestos to its employees engaged in ship construction and ship repair at naval shipyards. Hazard control measures implemented by the shipyard medical departments and safety divisions are in accordance with accepted standards of industrial hygiene practices in the U. S. Stringent efforts are directed at keeping the concentration of airborne asbestos dust below the level recommended by the American Conference of Governmental Industrial Hygienists. An energetic periodic physical examination program of shipyard workers is aimed at insuring the health of workers engaged in the asbestos trades.

For more than two years, the Naval Ship Systems Command and the Commander, Boston Naval Shipyard have been cooperating with a prominent investigator in a study whose ultimate goal is to optimize safe working conditions with respect to airborne asbestos. Upon the development of further scientifically founded recommendations for the control of this hazard, NAVSHIPS in cooperation with BUMED will take the necessary steps to implement them at the naval shipyards and other naval activities.

Enclosure (1) to Ser 6101C-1105

List of Packing and Gasket Specifications

MIL-P-31	Packing Material, Asbestos, Metallic Cloth and Tape
MIL-P-41	Packing, Asbestos, Rope and Wick
HII-G-76	Gaskets, Asbestos-Metallic Cloth
MIL-P-34	Packing, Asbestos, Rod, Braided
MIL-P-2911	Type II, Packing Assembly, Hydraulic Conical and V Types
MIL-A-7021	Asbestos Sheet, Compressed for Fuel, Lubricant, Coolant, Water and High Temperature Resistant Gaskets
MIL-G-16265	Gaskets, Metallic Asbestos, Spiral Wound
MIL-P-16635	Packing, Rounded, Bulk and Preformed
MIL-P-17303	Packing Materials, Plastic Metallic and Plastic Nonmetallic
MIL-P-17349	Packing Material, Rod, High Pressure, Asbestos
MIL-P-17350	Packing Material, Semi-Metallic, Symbol 1400
MIL-A-17472	Asbestos Sheet, Compressed (Gasket Material)
MIL-G-21032	Gaskets, Metallic-Asbestos, Spiral Wound

Enclosure (2)

Use of Asbestos for Piping and Machinery Insulation

The naval shipyards have been aware of the hazards associated with the use of asbestos for many years and have to a great degree eliminated its use.

This is especially true with regard to asbestos felt materials which are considered the worst offenders with regard to propagation of air borne dust particles of the magnitude which can reach the lungs and cause asbestosis or mesothelioma. In 1964, NAVSEC advised shipbuilding and repair facilities that fibrous glass felt MIL-I-16411, Type II could be used at two-thirds the thickness required for asbestos felt. This recognition of the superior insulating characteristics of glass felt resulted in approximately equal material cost, thus eliminating the only advantage of asbestos. The response to this announcement was enthusiastic. A copy of the advising letter is attached hereto.

MIL-I-2781, Classes C and F Performed Fibrous Pipe Covering contains asbestos fiber bonded with diatomaceous earth. The danger in the use of this material results from sawing to form mitered joints or shorter than three-foot sections. Classes D and E of this specification are calcium silicate and are equal in insulating value. It is considered feasible to discontinue use of the fibrous type without downgrading our insulation practices.

The other asbestos form in common use is cloth. However, a recent development with regard to this item practically eliminates dust propagation. About a year ago as the result of a NAVSHIPYDPHILA Value Engineering Project, "rewettable asbestos cloth" was approved for Navy use. In this product, an adhesive is applied at the manufacturer's plant. The user merely soaks this cloth in water and applies it to the insulation. All asbestos fibers are bonded together by the adhesive and dust release is negligible.

Enclosure (4) to Ser 6101C-1105

Exhibit 22



DEPARTMENT OF THE NAVY
NAVAL SHIP SYSTEMS COMMAND
WASHINGTON, D.C. 20340

IN REPLY REFER TO
NAVSHIPSINST 5100.26
07D:JC:lb
Ser 70-07D
9 February 1971

NAVSHIPS INSTRUCTION 5100.26

From: Commander, Naval Ship Systems Command

Subj: Asbestos Exposure Hazards; control of

Ref: (a) MIL-STD 769C of 15 Nov 1969, Thermal Insulating Requirements for Machinery and Piping
(b) NAVSHIPS Technical Manual 9390 of Sep 1967
(c) NAVMAT P-5100 "Safety Precautions for Shore Activities"
(d) NAVMAT P-10470 "Safety Equipment Manual"

Encl: ✓(1) Suggested Warning Signs

1. Purpose. To prescribe appropriate safety precautions during the use of asbestos.

2. Background.

a. Asbestos is a broad term applied to a group of fibrous minerals such as amosite, chrysotile, crocidolite, etc., composed of silicates of iron, sodium, calcium and/or magnesium.

b. The most critical use of asbestos in the Navy from a safety viewpoint is in the fabrication, installation, repair or removal of pipe and boiler insulation materials. Some workers sustain accidental contacts either while employed in various capacities where asbestos products are processed or when working in plant areas in which an environmental pollution of the air exists due to asbestos. The severe effects of asbestos on the lungs is the main factor for considering the elimination of asbestos as an insulation material on piping, ducts and boilers. References (a) and (b) set standards of materials which are to be used. These references will be reviewed periodically and changed as necessary to reflect the use of new materials that meet or exceed the standards now in use. Reference (c) also provides guidance on precautions regarding asbestos.

3. Action. The following safety precautions will be observed by all supervisors and workers engaged in the fabrication, installation and/or removal (rip-out) of asbestos-containing insulation/material. The provisions of this instruction will be effective as of this date. The provisions of this instruction are considered as minimum health and safety requirements; more stringent restrictions may be applied by local Commanders.

S202

DEFENDANT'S
EXHIBIT
Buffalo Pumps

1673 [7:5] 5
NAVSHIPSINST 5100.26

9 February 1971

be entitled "Fabrication"

(1) Asbestos operations should be segregated from other operations so as not to expose other personnel to asbestos dusts. If the work cannot be separated, personnel in immediately adjacent areas will wear a Bureau of Mines approved respirator for irritant dusts and other prescribed, personal, protective equipment. The various items of personal, protective equipment will be those approved by the Industrial Hygienist, the Medical Officer, or as authorized by reference (d).

(2) The handling and fabrication areas will be restricted to the necessary workers, supervisors and inspection personnel directly concerned with the asbestos operations. Casual visitors or passers-by will be restricted from entry into any area where asbestos containing materials are being fabricated. All supervisors, workers, inspectors, etc., will wear approved respirators for irritant dusts when they are working with dry material containing asbestos or are in asbestos-contaminated areas of work spaces.

(3) Asbestos cloth cutting tables or benches provided with adequate local exhaust ventilation should be used whenever cutting operations are performed. Exhaust air containing asbestos dust will not be dispersed into the atmosphere without being adequately filtered. Filters will be carefully changed or cleaned to prevent atmospheric contamination.

(4) Power saws will be located in a suitable enclosure which is equipped with exhaust ventilation to a filter trap. This exhaust ventilation will be independent of the shop ventilation supply/exhaust system. The switches will be interlocked so that the exhaust system operates at all times while the saw blades are in operation.

(5) Suitable waste containers lined with disposable plastic bags will be provided at each cutting table/fabrication operation. Discarded and scrap asbestos materials will be immediately placed in plastic bags which are then sealed for disposal. Scrap should be disposed of on a daily basis.

(6) The Industrial Hygienist or Medical Officer will recommend the exact method and place of disposal of asbestos dusts and scrap to minimize exposures.

(7) Shop walls, ceilings and floors should be designed to prevent dust accumulations and to facilitate housekeeping measures.

NAVSHIPSINST 5100.26
9 February 1971

(8) Industrial type vacuum cleaners should be used to pick up dusts and scrap. The vacuum cleaner operator will wear an approved respirator when operating his cleaner. The water impaction collection system vacuums best and safely. Dry sweeping of scrap or dust should not be permitted. If sweeping is necessary, the scrap and possible dust will be wet down with a fine water spray prior to sweeping. Drop cloths will be placed under work tables or areas if scraps and dust will fall into difficult to clean areas or crevices.

(9) Asbestos cloth or tape will not be torn or ripped. Scissors or cutting knives will be used.

(10) In-Shop operations for mixing of all cements will be provided with permanent exhaust ventilation equipment. This exhaust air will not be vented into the shop atmosphere and must be adequately filtered before its release to the outside atmosphere. In-bag mixing may be done without exhaust ventilation so long as bag integrity is maintained.

(11) The asbestos cloth shall be wet down prior to fabrication.

(12) All regularly assigned insulation workers and supervisors will be given a 74" x 17" annual chest X-ray. This will be done on the same continuing, periodic basis even if the worker is transferred or reassigned into another job title. X-ray films of asbestos workers, active, reassigned or retired, will be specially identified to the consulting radiologist to alert him to the need for a special type of reporting. The health records of insulation workers will be marked "Asbestos worker".

(13) Insulation workers should be provided with clean coveralls at the beginning of each shift or as often as needed. The coveralls will be removed before the removal of the respirator and should not be "beaten" to remove excess dusts or scrap adhering to it. Contaminated coveralls will be placed in plastic bags, until disposed of or laundered.

(14) Materials will be removed from their cartons or package with care to reduce dust or scrap generation. Wetting of the material prior to removal substantially reduces dust production.

(15) The Industrial Hygienist will provide at least twice yearly indoctrination talks to all asbestos workers on the proper measures of personal protection against asbestos exposure.

NAVSHPINST 5100.26
19 February 1971

(16) Adequate warning signs (enclosure (1) or similar) will be posted at all entrances to the fabrication shop sites to alert workers and other personnel that asbestos operations are in progress.

(17) The Industrial Hygienist should make frequent inspection of the Fabrication and Installation sites to check the level of airborne contamination. These inspections should be done monthly or more often as required. The Threshold Limit Value (TLV) for airborne asbestos is 5 fibers greater than 5 microns per milliliter. If this TLV is exceeded, the Industrial Hygienist will assist the shop foreman in designing better preventive measures to control the airborne contamination. Asbestos installation, fabrication or removal operations should be suspended until the proper TLV can be maintained so as to protect the workers and others in the area.

(18) Cement bags will be opened wide to permit emptying of the contents without shaking. The material should be made into a slurry as quickly as possible to prevent dust generation. Empty bags will be wet down and placed in a waste container.

(19) Suitable replacement materials for asbestos will be used where practicable. New or untested replacement materials will be submitted to NAVSEC for evaluation and approval prior to use.

b. Installations

(1) Personnel engaged in Installation operations will wear Industrial Hygienist approved respirators whenever asbestos containing materials are being handled. The Medical Officer will be the approval authority for any exceptions.

(2) Unpacking and application of insulation materials at the installation site will be done in such a manner that will minimize airborne dust.

(3) The areas around the installation procedures should be isolated when possible. Adequate warning signs (enclosure (1)) will be posted. Only persons whose work requires their presence should be permitted in such areas. If airborne asbestos dust is present, they will wear Bureau of Mines approved respirators for dusts or leave the area.

(4) The Industrial Hygienist will be requested to determine suitable methods for preventing large scale contamination of machinery and engine spaces when installation or removal operations are performed in these areas.

NAVSHPINST 5100.26
9 February 1971

(5) Suitable waste containers lined with disposable plastic bags will be kept available at the installation site so that discarded or scrap insulation materials can be immediately placed in them.

(6) The exact method and place of disposal of scrap asbestos and asbestos dust will be approved by the Industrial Hygienist or the Medical Officer. Personnel assigned these tasks will be specifically advised on needed precautions by the Industrial Hygienist or the shop supervisor.

(7) The ventilation requirements of shipboard or confined spaces will be determined by the Industrial Hygienist or Safety Officer and will be in accord with Article 0212 1045-1054 of reference (c).

(8) Portable dust collectors/industrial-type vacuum cleaners should be placed in use at the point of operations, within confined spaces when possible.

(9) Decks and spaces contaminated by insulation debris will not be dry swept. These areas must be wet down by a fine spray prior to sweeping (when vacuum cleaners cannot be used).

(10) Workers performing insulation work should be provided with clean paper coveralls when dusty conditions are to be encountered. The coveralls will be removed before the respirator is removed. The coveralls should not be "beaten" to remove excess dusts or scraps adhering to it. Contaminated coveralls will be disposed of by placement in the asbestos scrap bag.

c. Removal (Rip-Out):

(1) Personnel engaged in Removal operations will wear Bureau of Mines approved respirators whenever asbestos containing materials are being handled. The Medical Officer will be the approval authority for any exceptions.

(2) The area around the Removal procedures should be isolated when possible. Adequate warning signs (enclosure (1)) will be posted. Only persons whose work requires their presence will be permitted in such areas. If airborne asbestos dust is present, they will wear Bureau of Mines approved respirators for irritant dusts or leave the area.

(3) The Industrial Hygienist/Medical Officer should designate specific procedures to collect scrap and dust in the machinery spaces.

NAVSHPINST 5100.26

9 February 1971

(4) The area(s) in which asbestos removal takes place will be confined when possible by means of curtains, portable partitions, drop cloths, etc., to prevent excessive contamination of other areas.

(5) In removal operations that involve dusty work, clean paper coveralls will be supplied at the start of each shift; then for lunch, the workers will dispose of the dirty coveralls, then dispose of their respirator filters. After lunch they will put on clean coveralls and respirators with new filters. At the end of the shift all contaminated coveralls will be disposed of by placement in the asbestos scrap bags.

(6) Suitable waste containers lined with disposable plastic bags will be kept available at the removal site so that discarded or scrap insulation materials can be immediately placed in them.

(7) The exact method and place of disposal of scrap asbestos and asbestos dust will be approved by the Industrial Hygienist/Medical Officer. This is particularly applicable on-board ships and in machinery spaces.

(8) High asbestos-containing scrap material should be wet down before collection, hauling or dumping. Personnel assigned these tasks will be specifically advised on needed precautions by the Industrial Hygienist or the insulation shop supervisor.

(9) The ventilation requirements of shipboard or confined spaces will be determined by the Industrial Hygienist or Safety Officer and will be in accord with articles 0212, 1045-1054 of reference (c).

(10) Portable dust collectors/industrial-type vacuum cleaners should be placed in use at the point of operations within confined spaces. They may be used to temporarily and partially clean a worker who has to leave the work area for a short time.

(11) Decks and spaces contaminated by insulation debris, should not be dry swept. These areas must be wet down by a fine spray prior to sweeping (when vacuum-cleaners cannot be used).

(12) A cast cutter similar to the Number 845 STRYKER CUTTER will be used when possible during removal operations. This is a cutter used by doctors to remove plaster casts from patients. Old insulation should not be ripped or torn. It should be cut whenever possible. The addition of a vacuum attachment to the STRYKER CUTTER will materially aid in controlling dust generation. This attachment should be used whenever practicable.

NAVSHIPSINST 5100.26
9 February 1971

(13) The Industrial Hygienist will periodically evaluate the level of asbestos exposure and recommend positive measures for dust control in various areas. This evaluation should be done at the start of each new asbestos operation and as often thereafter as the findings indicate to provide effective control over dust producing operations.

(14) The use of off-hours work should be considered to minimize the number of personnel susceptible to exposure of irritant dusts.

d. Approved Safety Materials/Clothing:

(1) The Industrial Hygienist will recommend and approve the various types of respirators, coveralls and other needed personal protective equipment to be used by personnel engaged in various asbestos operations. Only personal protective equipment approved in accordance with Federal Specification GGG-M-125, Type III, Classes 1 and 2 as set forth in reference (d) will be used.

(2) Each worker will be responsible for maintaining his respirator and filters in a satisfactory condition. He will wear it in a proper manner when working on dust producing operations and during all asbestos removal operations.

(3) Supervisors will enforce the proper use of personal protective equipment during all phases of asbestos work. They will arrange for prompt, scheduled physical examinations and X-rays as prescribed by the Medical Officer (normally annually).

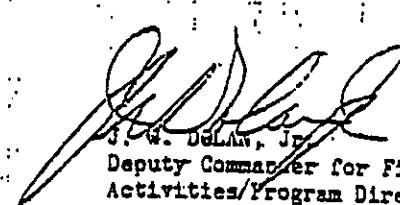
(4) Supervisors will arrange for an adequate supply of clean coveralls and new filters for the respirators used by insulation workers.

e. Application of Substitute Materials For Asbestos:

(1) Any proposed materials for use in place of asbestos will be submitted to NAVSEC for evaluation and approval prior to use.

Distribution:

SNDL FKL1 NAVSHIPYD
FKL2 SUPSHIP
FKL6 INACTSHIPFAC
FB30 NAVSHIPREPFFAC
FB34 FLEACT SASEBO



J. W. DeLean, Jr.
Deputy Commander for Field
Activities/Program Director for
Shipyard Modernization and Management

NAVSHPINST 5100.26

9 February 1971

Distribution (Continued):

Copy to:
SNDL A5 BUMED (732)
B5 COGARD
EKA1C NAVFAC
EKA1E NAVSUP
FP2 NAVSAFECEC
A4A NAVMAT (046)
A3 OPNAV (098)
NAVSEC (6101, 6140, 6105E, 6131, 6153)
NAVSHP (07D)(100)
NAVSHP Special List Y-2

Stocked at:
Supply & Fiscal Department
Code 514.32, Naval Station
Washington, D. C. 20390

J. Crawford, x27606
L. Braidinger, 2/1/77

NAVSHIPSINST 5100.26
9 February 1971

(1) This bulletin is issued to inform all
personnel of the following information:
1. Identification of asbestos containing materials
2. Methods of protection against exposure

(2) The following areas are considered to be
asbestos hazard areas:

(3) SUGGESTED WARNING SIGNS

(1) (a) (1) (i) (1)
Asbestos Hazard Area
Keep Out
DANGER
Asbestos
Hazardous
Material
Wear Respirator

(2) (a) (1) (i) (2)
Asbestos Hazard Area
Asbestos Hazard Area
Wear Respirator

(3) (a) (1) (i) (3)
RESTRICTED ACCESS
ASBESTOS FABRICATION AREA
Others of the areas
are to be labeled similarly

(4) (a) (1) (i) (4)

(5) (a) (1) (i) (5)
RESTRICTED ACCESS
ASBESTOS INSTALLATION/RIP OUT
WEARING OF RESPIRATORS REQUIRED

Exhibit 23

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 1 of 45 PageID
#630

UNIFORM LABELING PROGRAM- NAVY
9/24/56

WK Navy 5106

Case 1:11-cv-00406-LEK-RLP Document 8-20 Filed 06/30/11 Page 2 of 45 PageID
631

DEPARTMENT OF THE NAVY
Office of the Secretary
Washington 25, D. C.

5760-37
SECKAV-6244-3
DRAFTED-7231-par
26 September 1956

SECRETARIAL INSTRUCTION

From: Secretary of the Navy.
 To: Chief of Naval Material
 Chief of Naval Operations
 Chief of Naval Personnel
 Chief of Naval Research
 Chief, Bureau of Aeronautics
 Chief, Bureau of Medicine and Surgery
 Chief, Bureau of Ordnance
 Chief, Bureau of Ships
 Chief, Bureau of Supplies and Accounts
 Chief, Bureau of Yards and Docks
 Commandant, U. S. Marine Corps
 Commander, Military Air Transport Service
 Subj: Uniform labeling program for hazardous industrial chemicals
 and materials.
 Encl: (1) Markings and Design of Labels
 (2) Tentative Label Classification Guide
 (3) Elements of a Labeling Program

1. Purpose. The purpose of this Instruction is to standardize on labeling requirements for hazardous chemical products during the ~~year~~ stage, and to provide selective labels which will contain pertinent information designed to warn users of the potential dangers involved.

2. Scope. This Instruction applies to the labeling of all hazardous materials throughout the Naval Establishment whenever distribution of hazardous chemicals and materials is made to the actual consumer (shop, office, or unit). It applies to materials received from any supply source, provided the material is intended for ultimate use at the local activity. In this regard it refers to labeling of the original container, as well as any other container to which the material may subsequently be transferred. This Instruction is not intended to govern:

a. The type of labels to be affixed by the manufacturer. (These are governed by State and Federal laws and regulations depending on the nature of the material and whether the shipment is interstate or intrastate. In addition, most major manufacturers of chemicals abide by the "Warning Labels Guide" published by the Manufacturing Chemists' Association.)

SICKAVICEST 4860-1
24 September 1956

OFFICE OF THE SECRETARY

b. The type of labels to be affixed to containers of chemicals or drugs used, or dispensed, by medical department pharmacists.

c. Those chemicals used by clinical or chemical laboratories, where small quantities of the chemicals are to be used as reagents by trained personnel who are familiar with the potential hazards involved. (The exempted laboratories will be those designated by the various bureaus, offices, and Marine Corps.)

d. The labeling of explosives, gaseous, and flammable, and compressed gases. (These are adequately covered by current instructions.)

3. **Background.** The rapid development of new chemical products and the introduction of new chemical processes make it mandatory that precautionary measures be taken during the handling of toxic and dangerous chemicals. Warning labels affixed to containers of hazardous chemicals are one of the most practical means of accomplishing this objective. This Instruction is based on a composite of the procedures recommended by the Manufacturing Chemists' Association, the International Labor Organization, the American Conference of Governmental Industrial Hygienists, the Atomic Energy Commission, and the labeling practices presently in effect at the Naval Gun Factory, the Alameda Naval Air Station, and the Mare Island Naval Shipyard.

4. Action

a. **Navy Department Standardization Office.** The Navy Department Standardization Office shall effect the assignment of a limited coordination military (Navy) project in connection with this Instruction to standardize the printed labels in respect to quality of paper, size, color, shape, insignia, wording, and design; quality of the glue; specifications for inks (including colors of inks); and other related matters. Inclosure (1) summarizes the markings and designs for labels agreed upon by representatives of the bureaus and offices.

b. **Bureau of Supplies and Accounts.** The Bureau of Supplies and Accounts shall initiate procedures to have the necessary labels stocked as General Stores items for use by all naval activities.

c. **The Technical Bureaus.** The classification of hazardous chemicals and materials shall be accomplished through the joint efforts of the technical bureaus in that each Bureau shall be responsible for passing on these aspects, of any single item, which fall within its technical purview.

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 4 of 45 PageID
#: 633

OFFICE OF THE SECRETARY

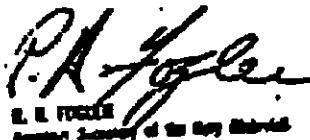
5780-G
SICKAVIDAY 600073
24 September 1956

To: Safety Preventions Board. The Safety Preventions Board shall:

(1) Publish in Safety Preventions (OASD 34-71), a "Label Classification Guide" listing the classification of hazardous chemicals and materials currently in use as determined by the appropriate technical bureaus or offices.

(2) Revise the "Label Classification Guide" in accordance with information currently provided by the responsible technical bureaus and offices relative to the use of new chemicals and proprietary materials, deletions, and changes in classifications.

To: Bureau, Offices, and Marine Corps. The bureaus, offices, and Marine Corps, shall initiate implementing instructions for use by activities under their management control upon completion of action required by paragraphs 4a, 4b, 4c, and 4d(1), above. Enclosure (3) is an outline of the "Elements of a Labeling Program" for guidance.


R. L. FOYE
Assistant Secretary of the Navy (NavFav)

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 5 of 45 Page
#: 634

Enclosure (1)

5700.8
SHEKAVIKET 6060+5
24 September 1956

Varieties and Patterns of Labels

Class	Background	Color of Letters	Shape of Insert	Insights
I. Fire hazard	Blue	Red	rectangle	Flame.
II. Toxic and fire hazard	Orange	Black	Square	Flame and flame.
III. Toxic	dry (dirty white).	Orange	circle	Small.
IV. Poisonous	White	Red	triangle	Small and sharpended.
V. Corrosive	White	Black	triangle	Rounded.
VI. Radiation hazard	Yellow	Purple	square	Large pointed properties.

All labels shall be of the sizes that is, 2 inches square and 6 inches square.

Enclosure (1)

Case 1:11-cv-00406-LEK "RLP" Document 8-20 Filed 06/30/11 Page 6 of 45 PageID
#:635

Exposure (2)

5/10/6
SERIAL# 66667
26 September 1956

Tentative Label Classification Guide
4 August 1956

1. This label classification guide is to be used with the labeling procedure for hazardous chemicals and materials. It indicates the proper labels to be affixed on hazardous items in Federal Supply Classification Groups 34, 42, 59, 65, 67, 68, 75, 79, 80, and 93 with miscellaneous 1, 2, and 3 coordinate items.

2. This guide is composed of the following sections:

(a) INDEX: Listed in Federal-Stock-Number sequence with cross reference to former Navy-Stock-Number, page where listed, and applicable label assigned.

(b) ALPHABETIC LISTINGS

(c) APPENDIX: Listed in former Navy-Stock-Number sequence with cross reference to Federal-Stock-Number, page where listed, and applicable label assigned. The appendix is furnished as an additional conversion aid.

Exposure (2)

SEARCHED INDEXED SERIALIZED
22 September 1956

Index

Exhibit No.	Page No.	Page Label	Page No.	Page Label	Page No.	Page Label
0 3432-255-4574	654-7-675	17	III		0 570-146-1692	032-4-138-32
	-677	17	III			-136-30
	-680	17	III			-136-30
	-681	17	III			-136-30
	-682	17	III			-136-30
	-683	17	III			-136-30
	-684	17	III			-136-30
	-685	17	III			-136-30
	-686	17	III			-136-30
	-687	17	III			-136-30
	-688	17	III			-136-30
	-689	17	III			-136-30
	-690	17	III			-136-30
	-691	17	III			-136-30
	-692	17	III			-136-30
	-693	17	III			-136-30
	-694	17	III			-136-30
	-695	17	III			-136-30
	-696	17	III			-136-30
	-697	17	III			-136-30
	-698	17	III			-136-30
	-699	17	III			-136-30
	-700	17	III			-136-30
	-701	17	III			-136-30
	-702	17	III			-136-30
	-703	17	III			-136-30
	-704	17	III			-136-30
	-705	17	III			-136-30
	-706	17	III			-136-30
	-707	17	III			-136-30
	-708	17	III			-136-30
	-709	17	III			-136-30
	-710	17	III			-136-30
	-711	17	III			-136-30
	-712	17	III			-136-30
	-713	17	III			-136-30
	-714	17	III			-136-30
	-715	17	III			-136-30
	-716	17	III			-136-30
	-717	17	III			-136-30
	-718	17	III			-136-30
	-719	17	III			-136-30
	-720	17	III			-136-30
	-721	17	III			-136-30
	-722	17	III			-136-30
	-723	17	III			-136-30
	-724	17	III			-136-30
	-725	17	III			-136-30
	-726	17	III			-136-30
	-727	17	III			-136-30
	-728	17	III			-136-30
	-729	17	III			-136-30
	-730	17	III			-136-30
	-731	17	III			-136-30
	-732	17	III			-136-30
	-733	17	III			-136-30
	-734	17	III			-136-30
	-735	17	III			-136-30
	-736	17	III			-136-30
	-737	17	III			-136-30
	-738	17	III			-136-30
	-739	17	III			-136-30
	-740	17	III			-136-30
	-741	17	III			-136-30
	-742	17	III			-136-30
	-743	17	III			-136-30
	-744	17	III			-136-30
	-745	17	III			-136-30
	-746	17	III			-136-30
	-747	17	III			-136-30
	-748	17	III			-136-30
	-749	17	III			-136-30
	-750	17	III			-136-30
	-751	17	III			-136-30
	-752	17	III			-136-30
	-753	17	III			-136-30
	-754	17	III			-136-30
	-755	17	III			-136-30
	-756	17	III			-136-30
	-757	17	III			-136-30
	-758	17	III			-136-30
	-759	17	III			-136-30
	-760	17	III			-136-30
	-761	17	III			-136-30
	-762	17	III			-136-30
	-763	17	III			-136-30
	-764	17	III			-136-30
	-765	17	III			-136-30
	-766	17	III			-136-30
	-767	17	III			-136-30
	-768	17	III			-136-30
	-769	17	III			-136-30
	-770	17	III			-136-30
	-771	17	III			-136-30
	-772	17	III			-136-30
	-773	17	III			-136-30
	-774	17	III			-136-30
	-775	17	III			-136-30
	-776	17	III			-136-30
	-777	17	III			-136-30
	-778	17	III			-136-30
	-779	17	III			-136-30
	-780	17	III			-136-30
	-781	17	III			-136-30
	-782	17	III			-136-30
	-783	17	III			-136-30
	-784	17	III			-136-30
	-785	17	III			-136-30
	-786	17	III			-136-30
	-787	17	III			-136-30
	-788	17	III			-136-30
	-789	17	III			-136-30
	-790	17	III			-136-30
	-791	17	III			-136-30
	-792	17	III			-136-30
	-793	17	III			-136-30
	-794	17	III			-136-30
	-795	17	III			-136-30
	-796	17	III			-136-30
	-797	17	III			-136-30
	-798	17	III			-136-30
	-799	17	III			-136-30
	-800	17	III			-136-30
	-801	17	III			-136-30
	-802	17	III			-136-30
	-803	17	III			-136-30
	-804	17	III			-136-30
	-805	17	III			-136-30
	-806	17	III			-136-30
	-807	17	III			-136-30
	-808	17	III			-136-30
	-809	17	III			-136-30
	-810	17	III			-136-30
	-811	17	III			-136-30
	-812	17	III			-136-30
	-813	17	III			-136-30
	-814	17	III			-136-30
	-815	17	III			-136-30
	-816	17	III			-136-30
	-817	17	III			-136-30
	-818	17	III			-136-30
	-819	17	III			-136-30
	-820	17	III			-136-30
	-821	17	III			-136-30
	-822	17	III			-136-30
	-823	17	III			-136-30
	-824	17	III			-136-30
	-825	17	III			-136-30
	-826	17	III			-136-30
	-827	17	III			-136-30
	-828	17	III			-136-30
	-829	17	III			-136-30
	-830	17	III			-136-30
	-831	17	III			-136-30
	-832	17	III			-136-30
	-833	17	III			-136-30
	-834	17	III			-136-30
	-835	17	III			-136-30
	-836	17	III			-136-30
	-837	17	III			-136-30
	-838	17	III			-136-30
	-839	17	III			-136-30
	-840	17	III			-136-30
	-841	17	III			-136-30
	-842	17	III			-136-30
	-843	17	III			-136-30
	-844	17	III			-136-30
	-845	17	III			-136-30
	-846	17	III			-136-30
	-847	17	III			-136-30
	-848	17	III			-136-30
	-849	17	III			-136-30
	-850	17	III			-136-30
	-851	17	III			-136-30
	-852	17	III			-136-30
	-853	17	III			-136-30
	-854	17	III			-136-30
	-855	17	III			-136-30
	-856	17	III			-136-30
	-857	17	III			-136-30
	-858	17	III			-136-30
	-859	17	III			-136-30
	-860	17	III			-136-30
	-861	17	III			-136-30
	-862	17	III			-136-30
	-863	17	III			-136-30
	-864	17	III			-136-30
	-865	17	III			-136-30
	-866	17	III			-136-30
	-867	17	III			-136-30
	-868	17	III			-136-30
	-869	17	III			-136-30
	-870	17	III			-136-30
	-871	17	III			-136-30
	-872	17	III			-136-30
	-873	17	III			-136-30
	-874	17	III			-136-30
	-875	17	III			-136-30
	-876	17	III			-136-30
	-877	17	III			-136-30
	-878	17	III			-136-30
	-879	17	III			-136-30
	-880	17	III			-136-30
	-881	17	III			-136-30
	-882	17	III			-136-30
	-883	17	III			-136-30
	-884	17	III			-136-30
	-885	17	III			-136-30
	-886	17	III			-136-30
	-887	17	III			-136-30
	-888	17	III			-136-30
	-889	17	III			-136-30
	-890	17	III			-136-30
	-891	17	III			-136-30
	-892	17	III			-136-30
	-893	17	III			-136-30
	-894	17	III			-136-30
	-895	17	III			-136-30
	-896	17	III			-136-30
	-897	17	III			-136-30
	-898	17	III			-136-30
	-899	17	III			-136-30
	-900	17	III			-136-30
	-901	17	III	</		

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 8 of 45 PageID #: 637

J / d G. 8
SEARCHED - 6260-3
24 September 1956

Index

Enclosure (2)

5700.8
SEARCHED 6260.3
24 September 1956

<u>FBI File No.</u>	<u>Former No.</u>	<u>FBI File No.</u>	<u>Former No.</u>	<u>Page</u>	<u>Label</u>
0 6810-266-1937	051-4-1135	11	IV	25	III&V
-1338	051-4-116-940	11	IV	25	II
-3119	-953	11	IV	25	II
-4057	051-4-1163-100	11	IV	25	II
-3714	051-5-924-577	25	III	25	I
-3711	051-5-1166	22	IV	25	V
-3722	051-4-1298	11	IV	25	V
-3723	-1559	11	IV	25	V
-3724	-1550	11	IV	25	V
-3725	-1561	11	IV	25	V
-3726	-1562-7	11	IV	25	V
-39015	051-7-12659-10	26	IV	25	V
-39025	051-5-2001-20	26/25	IV	25	V
-9061	051-4-130	19	III	26	V
-9062	051-4-115	19	III	26	V
-9063	051-4-1159-100	26	III	26	V
-9065	-955	20/25	IV	26	V
0 6810-270-6218	051-4-377-5	21	IV	26	V
-3782	051-4-1159-100	12	IV	26	V
-3783	051-4-116-900	12	IV	26	V
-3785	-955	12	IV	26	V
0 6810-275-1215	051-4-377-5	12	IV	26	V
-6019	051-4-115-90	12	IV	26	V
-6011	-954	12	IV	26	V
0 6810-281-3003	051-4-116-90	12	IV	26	V
0 6810-281-3005	-955	12	IV	26	V
0 6810-281-3020	051-5-2163-500	26	IV	26	V
-1339	-2313	25	IV	26	V
-2016	052-4-120-350	25	IV	26	V
-2037	-124	25	IV	26	V
-2038	-122	25	IV	26	V
-2039	-1060	25	IV	26	V
-2046	-3036	25	IV	26	V

Enclosure (2)

Index

<u>ESN No.</u>	<u>Former No.</u>	<u>Page</u>	<u>Label</u>	<u>ESN No.</u>	<u>Former No.</u>	<u>Page</u>	<u>Label</u>
0 6810-290-3857	051-4-1972	12	I	0 6810-381-3462	051-1-157-138	18	III
-3857	051-4-1765	22	IV	-6212	051-3-3339	19	IV
-4170	051-3-3126-39	25	IIIY	0 6810-285-23447	051-1-157-255	26/25	III
-4165	052-1-3100-13	27	II	-6297	-155-1235	18	IV
-4166	-3000	27	II	-6315	-171-135	18	IV
-4167	-3600	27	II	-7091	051-2-555	21	IV
0 6810-291-0637	051-4-1763	22	IIIY	W 6810-252-8016	25	25	IV
-4191	052-4-850	17	IV	-8019	-8019	25	IV
-4192	-850	17	IV	0 6810-250-3626	051-4-127	27	IV
0 6810-213-9513	051-1-127	17	I	-6227	-100	27	IV
0 6810-216-8810	-157-500	18	II	0 6810-355-0138	051-1-137	17	IV
0 6810-322-2124	-361-137	18	III	-6340	-110	14	IV
0 6810-210-3123	051-8-310	16/45	IV	0 6810-269-9817	051-6-158-140	14	IV
0 6810-252-4230	051-1-157-609	16	III	0 6810-270-8253	051-5-155-200	14	IV
0 6810-342-4231	-5	18	III	0 6810-271-5202	051-4-150	22	IV
-4222	-356-5	18	III	0 6810-1986-41	051-6-1986-41	14	IV
0 6810-216-8632	-359-30	24	IV	0 6810-215-1219	-1605-1225	15	IV
0 6810-343-4239	051-4-259-30	17	II	-5586	051-4-238-35	22	IV
0 6810-252-4230	051-1-155-135	17	II	0 6810-205-2026	-5550	22	IV
-3002	-162-133	18	II	-3719	051-5-469-50	21	IV
0 6810-269-2266	-157-640	18	II	-3012	051-6-1561-48	11	IV
0 6810-264-6584	051-5-118	21	II	-1043	-10	14	IV
-6485	051-8-1803	21	IV	-3044	-14	14	IV
-6592	051-1-157-75	16	II	-1432	051-9-1446	22	IV
-4693	-167-165	16	IV	-6782	052-4-3256-477	32	IV
-7923	-157-1625	18	II	0 6810-282-9614	051-5-160-135	12	IV
0 6810-270-3262	051-1-157-355	17	II	3 6810-26-4226	051-4-111-242	14	IV
0 6810-271-5215	-171	17	II	-4357	-154-15	20	IV
0 6810-261-1990	-165	16	II	-4304	051-5-1556	20	IV
-3058	051-5-109-930	21	IV	0 6810-246-1346	051-6-1561-56	11	IV

5/20/8
SEARCHED INDEXED SERIALIZED FILED
21 September 1956

Inclusive (2)

37, 38 N
SECRETARY OF STATE
24 September 1756

Enclosure (2)

3

Index

Exhibit	Exhibit No.	Former No.	Page No.	Label
0	8010-316-6136	0 8010-316-0363	16	I
-6137	-516-85	0 8010-316-0362	22	III
-6139	-912-60	-5191	23	II
-6140	-913-255	-5192	23	II
-6141	-912	-5193	23	II
-6142	052-4-20635-2	-5194	23	II
-6143	-20631	-5195	23	II
-6144	-20610	-5196	23	II
-6145	-516-50	-5197	23	II
-6146	-516-7	0 8010-316-4245	26	II
-6147	-20524-160	0 8010-316-4250	26	II
-6148	-5175	0 8010-316-4254	26	II
-6149	-5177	-12020	22	IV
-6150	-20146-100	-12020	22	IV
-6151	-518	-12020	22	IV
-6152	-518-110	-12020	22	IV
-6153	-2553-915	-12020	22	IV
-6154	052-4-1663	-12020	22	IV
-6155	-2553-915	-12020	22	IV
-6156	-2862	-12020	22	IV
-6157	052-4-4200	-12020	22	IV
-6158	-1658	-12020	22	IV
-6159	-1659	-12020	22	IV
-6160	-1703	-12020	22	IV
0	8010-316-7082	0 8010-316-7080	22	IV
-7083	052-4-20635	-11135	22	IV
-7084	-20635	052-4-1660-50	27	II
-7085	052-4-919-23	052-4-919-50	27	II
0	8010-316-1504	0 8010-316-1503	16	I
0	8010-217-1504	0 8010-217-1504	26	II
-1507	-11132	0 8010-217-1505	23	II
-1508	-11132	0 8010-217-2221	21	II
-1509	-11137	0 8010-217-2221	20	II
-1510	-11137	-5150	22	II
0	8010-217-1516	0 8010-217-1516	21	II
0	8010-217-2036	0 8010-217-2036	21	II

Enclosure (3)

SEARCHED
26 September 1955

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 19 of 45 PageID#:

5780
SECNAV I&ST 6260-3
24 September 1956

Page No.	Paras No.	Page	Label
0 6080-316-1721	052-4-0997	21	None
" 7122	-0995	21	None
-7030	052-4-314-3115	16	
-7031	052-4-316-3120	14	
-7032	052-4-316-3120	14	
-7033	-3154-2015	16	
-7034	052-4-312-350	21	
-7035	-175	21	
-7036	052-4-316-3030	16	
-7037	-2100	14	
-7038	052-4-317-315	20	
-7039	-320	20	
-7040	-35	20	
-7041	-35	20	
-7042	-35	20	
-7043	-35	20	
-7044	-35	20	
-7045	-35	20	
-7046	052-4-3152-205	16	
-7047	052-4-3170-315	20	
-7048	052-4-3170-3110	16	
-7049	-3153-3020	14	
-7050	-3153-3020	14	
-7051	-3153-3020	14	
-7052	052-4-3175	21	
-7053	-3016-3100	21	
-7054	-3100	21	
-7055	052-4-3170-310	20	
-7056	052-4-3170-310	20	
-7057	-3100	20	
-7058	052-4-3170-310	20	
-7059	052-4-3170-310	20	
-7060	-3110	20	
0 6080-316-0113	-3016-3100	21	
-7061	-3100	21	
-7062	052-4-3170-310	20	
-7063	052-4-3170-310	20	
-7064	-3100	20	
-7065	-3100	20	
-7066	-3100	20	
-7067	-3100	20	
-7068	-3100	20	
-7069	-3100	20	
-7070	-3100	20	
-7071	-3100	20	
-7072	-3115	20	
-7073	-3115	20	
-7074	-3115	20	
-7075	-3115	20	

Enclosure (3)

Index

PSI No.	Former No.	Box No.	Former No.	Box	Label
0 6010-290-3875	052-4-3505	23	0 6030-161-5711	15	III
-1752	052-4-442	25	0 6030-165-4559	25	II
-1753	052-4-425	26	0 6030-2-20405	25	II
-3669	052-4-9104	21	0 6030-165-156	25	II
-3669	052-4-4905	20	0 6030-174-2584	15	II
-1050	052-4-4507	20	0 6030-2270-10	15	II
-1267	052-4-7100	20	0 6030-256-50	15	II
-4158	052-4-9148-785	18	0 6030-221-1613	15	II
-4159	052-4-2218-120	11	0 6030-221-163	15	II
-4213	052-4-4516-950	23	0 6030-221-9578	15	II
-4501	052-4-4516-955	23	0 6030-211-2314	15	II
-4615	052-4-5700	21	0 6030-211-2307	15	II
-4616	052-4-550	20	0 6030-218-2716	15	II
-4617	052-4-4013-155	16	0 6030-211-2751	15	II
-4618	052-4-4013-155	16	0 6030-211-0932	25	II
-4552	052-4-1713-510	20	0 6030-211-0953	25	II
-4665	052-4-1710	17	0 6030-211-0953	25	II
-4698	052-4-1717-90	20	0 6030-211-0959	25	II
0 6010-291-1050	0 6030-251-3510	20	0 6030-211-1293	25	II
-1061	-2286-2515	20	0 6030-211-1294	25	II
-1062	-2286-2515	20	0 6030-211-1295	25	II
-1063	-2286-2515	20	0 6030-211-1296	25	II
-1064	-2286-2515	20	0 6030-211-1297	25	II
-1065	-2286-2515	20	0 6030-211-1298	25	II
-1066	-2286-2515	20	0 6030-211-1299	25	II
-1067	-2286-2515	20	0 6030-211-1300	25	II
-1068	-2286-2515	20	0 6030-251-5409	25	II
-1069	-2286-2515	20	0 6030-251-5409	25	II
-5266	-5267	-556	-1304	25	II
-5267	-5267	-20540	-1304	25	II
0 6010-299-0224	0 6030-211-227	23	0 6030-251-5409	25	II
0 6010-299-0224	0 6030-211-227	26	0 6030-251-5409	25	II

SEARCHED 5
SERIALIZED 5
INDEXED 5
FILED 5
24 September 1996

Enclosure (2)

57/65
SEARCHED 6464-2
24 September 1956

File No.	Filing No.	Page	Label	FIM No.		Page	Label
				Former No.	Former No.		
W 8030-255-4450		15	III	0 8030-273-8697	052-C-1546-340	12	II
O 8030-262-3164	651-C-2411-503	15	III	-4701	052-C-8-950	12	III
O 8030-262-3177	652-C-2215-393	15	IV	-4702	052-C-300	12	III
O 8030-275-4097	2150-5	14	II	-4703	052-C-710	12	I
O 8030-281-3121	-10	14	IV	-4707	-755	12	I
O 8030-281-3122	-2098-10	14	V	-4708	-126	12	I
O 8030-281-3167	-3256-30	14	V	-4709	-127	12	I
2111	052-C-1683-20	15	IV	-4710	-745	12	II
2118	052-C-1091-35	15	IV	-4716	-156-159	12	II
2120	-30	15	V	-4717	-180-177	12	II
2121	052-C-1085	15	V	-4718	-200	12	I
2117	052-C-1154	15	V	0 8030-281-2723	052-C-85-351	12	III
2118	-3164	15	V	0 8030-285-3571	052-C-85-355	12	III
2119	-3165	15	V	0 8030-356-3461	052-C-335	12	II
2127	-3100-50	15	V	-519	-519	12	II
2122	052-C-2261	15	V	0 8030-346-4916	051-C-351	12	III
2115	052-C-2261	15	V	0 8030-340-2699	-350-360	12	III
2116	-2260	15	V	251-A-1734		12	IV
2117	052-C-310-60	15	V	151-A-281		12	IV
2118	-210-5	15	V	152-C-45-500		12	IV
2119	-210-5	15	V	-465-53		12	IV
2120	052-C-3084-90	15	V	-475		12	IV
2121	-18	15	V	-110		12	IV
2122	-12	15	V	-1112-415		12	IV
2123	-1255	15	V	-1553-50		12	IV
2124	-1254-100	15	V	-3097-35		12	IV
2125	-1335	15	V	277-C-50-9980		12	IV

Enclosure (2)

10

Index

20

Case 1:11-cv-00406-LÉK -RLP Document 8-20 Filed 06/30/11 Page 16 of 45 PageID
#: 645

Alphabetic Listing

5/24/8
STOCKLIST 62469
26 September 1956

-A-

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
AERASIVE Polishing Compound	G 5350-154-5826 -5827 -5828 -5829 -191-9776 -151-6256 -6257 -6258	III III III III III III III III
Vapor blast		
ACETONE Technical	G 6810-146-4795 -4796 -223-3735	I I I
ACID Acetic, glacial, technical Chromic (Chromium Trioxide Technical)	G 6810-275-1225 -176-1818 -261-3935 -3939	V IV IV IV
Hydrochloric, Technical (Muriatic)	-222-9645 -2660 -2661 -236-5665 -5666 -5671	V V V V V V
Hydrofluoric, Technical Nitric, Technical	-222-9655 -236-5670 -5683	IV IV IV
Oxalic, Dihydrate, technical Phosphoric, Ortho, technical	-361-5937 -236-5667 -214-6722	V V V
Sulfuric, technical	-116-7520 -251-8097 -6006 -246-6723 -6724 -6725 -6726 -290-3836	IV IV IV IV IV IV IV

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 17 of 45 PageID
#: 646

5/50.8
SEARCHERST 48644-
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
ADHESIVE		
Assembly gluing of laminates	0 6010-273-5701	III
	-5702	III
	-285-1571	III
Buoyancy Material	-273-5718	II
Cotton Brattice Cloth	-286-7126	I
Diving Outfit	-7430	II, IV
Deck, Leather, Dura-W and Plastics	-273-5697	II
Fibrores Glass Installation	-3706	I
	-5707	I
	-5708	I
	-5709	I
	-5710	I
	-5711	I
Mastic floor covering to cement	-286-7125	I
Newspaper Covered Cloth	-270-7113	II
Photographer's and Artists	-286-7129	II, IV
Rubber Emergency Repair	-7427	II, IV
Synthetics		
Rubber to Rubber	-7431	III
Rubber to Steel	-273-5726	II
	-3727	II
ALKOHOL; solution	0 6010-281-7169	II, IV
ALCOOL		
n-Butyl technical	-6928	II
Denatured	-222-2373	I
	-2374	I
Ethyl, technical	-285-2142	I
	-290-3510	I
Methanol, technical (Methyl)	-273-4010	II, IV
	-6011	II, IV
AMMONIA		
Dichromate		
Photographic	0 6750-276-5169	II, IV
Phosphoric acid	0 6750-252-9698	V
Hydrochloric		
Aqua Ammonia	0 6010-222-9643	V
	-130-3926	V
	-136-5672	V
Technical		
Lithographic	-261-3089	V

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 18 of 45
#: 647

5104.8

SECNADUST 6860-9
24 September 1958

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
AMMONIUM (Cont.)		
Reagent.....	0 6810-213-4436	I
Nitrate Technical	0 514-2390	I
ASPHALTUM lithographic	0 6850-282-3793	II
-C-		
BARIUM HYDROXIDE OCTAHYDRATE technical	0 6810-236-5677	III
BENZENE technical (Benzol)	V 6810-236-6172 -281-2764	IV IV
-C-		
CALCIUM		
Carbide technical	0 6810-230-3935 -3936 -3937	I I
Hydroxide technical	-230-3935	I
Hypocalorite technical	-174-1820 -230-8715 -235-0471 -0472	IV IV IV
Phosphide, technical	-236-5678	II
CARBON		
Dioxide Absorption Fluid	0 6810-265-7086	I
Dioxide Absorption Shells	0 6850-190-0101	II
Tetrachloride, technical	0 6810-184-1799 -191-3964 -223-2723 -281-2009	II II II II
-C-		
CAOUTCHOU		
Electronic equipment	N52-C-1110	II
Film	0 6810-56-5341	II
Lacatory Seal	-381-2723	II
Liquid		
Form "A" gasket	N52-C-628-955	II
Gasket	-465-52 -325	II II
General purpose	-46-500	II
Rubber gasket	-1112-675	II
Plastikene	-1553-99	I

Alphabetic Listing

11

Enclosure (2)

Case 1:11-cv-00406-LEK-RLP Document 8-20 Filed 06/30/11 Page 19 of 45
#: 648

5100.5

SENAVIAHST 626019
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
AMMONIUM (Cont.)		
Reagent	G 6810-214-3436	V
Nitrate Technical	Z 51-4-2390 G 6810-174-1619	I
ASPHALTUM Lithographic	O 6850-281-2793	II
BARIUM HYDROXIDE OCTAHYDRATE technical	O 6810-236-5677	III
BENZENE technical (Benzol)	V 6810-216-6172 -251-2761	IMIV IMIV
CALCIUM		
Carbide technical	G 6810-230-3935 -3936 -3937 -330-3935	I
Hydroxide technical	-174-1020	V
Hypocalorite technical	-130-4025 -235-0471 -2472	IMV IMV
Phosphide, technical	-236-5678	IV
CARBON		
Dioxide Absorption Fluid	O 6810-285-7286	V
Dioxide Absorption Shells	O 6850-290-8101	III
Tetrachloride, technical	O 6810-184-4799 -191-3964 -223-2723 -281-2003	III III III III
CHROM		
Electronics equipment	E 52-C-1110	III
Film	O 6840-356-5961	III
Leather belt	-351-2723	T
Liquid		
Ferro Al gasket	E 52-C-624-995	III
Gasket	-405-52 -405-53	III
General purpose	-61-508	III
Rubber gasket	-1112-675	III
Plastique	-1553-50	I

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 20 of 45 PageID
649

5/25/4
SEARCHER 4460-3
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
CHARGES Fire Extingisher	G 4210-223-9882 -159-1540	III V
CHLOROPHOR	G 6810-261-6707	III
CHROME CASE	G 5350-193-7222 -7225	III
CLEAVERS		
Electrolytic Metal	G 6850-285-4314	V
Instrument-Watch Solution	-270-8258	I
Rifle Bore Liquid	-285-4314	V
Scouring, Powder	G 7930-129-0407	V
Silicate-Steel Metal	G 6850-269-9017	V
Toilet Bowl	G 7930-167-4929	V
Type	G 7510-219-9017	III
COATINGS		
Bituminous		
Emulsion for Ballast Tanks	G 8030-161-5714 -261-4277	III
Metal	-275-8121 -6122	V
Waterproof for Wood	-286-3976	II
Plastic		
Acrylic, Protective	G 8010-290-6159	II
Spray type, Stripable	G 2030-166-2808 -275-8091 -4094 -286-3975 -221-1813 -1814	II
Sealer, Underbody		
COMPOUND		
Abrasive polishing	G 5350-186-5826 -5827 -5828 -5829 -191-9776	II
Antifreeze	G 6850-285-4757	III
Shapex Plating (Grease substitute)	-271-5120 -290-3861	I
Boiler, Liquid	-291-3042	II
Carbon removing	-3043 -3044 -286-7106 -290-3861	II

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 21 of 45 PageID
650

5/00-3
SECRETARIAL 6260-J
24 September 1956

<u>Description</u>	<u>Stock-No.</u>	<u>Label</u>
CLAYGROUND (Cont.)		
Caulking		
Wooden Hull seam	G 5030-241-2761	I
Metal enclosures	-238-2788	III
Corrosion Preventative	-251-5043	I
Non Oxidizing	V 5030-255-1450	III
Thin film,	-1451	III
Hard film	-144-1299	II
Soft film	-1300 -1302 -1295 -1297 -1298 -1299 -1293 -1294 -1296	II
Water displacing soft film		
Corrosion Removing	G 6252-275-1239	IV
Cyanide, Heat treating	G 6254-246-3760	IV
Glyptal	-3761	IV
Insulating, Electrical	M52-C-3097-25	IV
Preservation	G 5970-395-7131	IV
Hard film	V 5030-224-9578	I
Soft film	-231-2347 -244-1304	I
Preservative		
Canvas	G 5030-281-2347	II
Cotton Cloth	-2730 -2723	II
Rust Arresting Temporary	-231-2344 -174-3242	I
Sandblast Antirust Powder	G 6050-281-6942	III
Sealing		
aerosol-type plastic	G 5030-364-3837	IV
Linoleum seam	-367-5058	III
Polymer-Powder	-251-4502	III
Oil stop	-3618	III
Oil and water stop	-3817	III
Smoothing Cement	G 5030-227-1698	I
Vapor barrier	G 5030-174-2588 -3589	II
COPPER CYANIDE TECHNICAL	G 6210-236-5681	IV

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 82 of 151

SEARCHED INDEXED SERIALIZED FILED
SICKAERT 6600-3
21 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
DUTERS		
Cobalt Naphthenate	6 8610-165-1780	IT
Lanthan and Manganese	-4751	IT
Lanthan and Manganese	-4752	IT
Lanthan and Manganese	-4753	IT
Manganese Linoleate	-4754	IT
Manganese Naphthenate	-4755	IT
DUPLICATING FLUID (Direct Process)	6 7510-172-9800	IT

EXCELS
Note: All Excels will bear Label No. I
except those in the following categories

Chlorinated Rubber-based	0 0000-25-2295 -4320 -7321 -284-7830 -7832 -7833 -7834 -7835 -9051 -9052 -9053 -270-2868 -2869 -2870 -2871 -2872 -2873 -2874
Semigloss for drums and tanks	
Black	-4617
Olive-drab	-4668

FILLER WOOD
Paste
Plastic

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 23 of 45 PageID
652

57-61-5
SEARCHED *[initials]*
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
FILTER AIDS (Diatomaceous Silica)		
Chemically treated	C 9390-290-5049	III
Untreated	-364-0918	III
PINE EXPLOSIVE CHARGES		
Anti-freeze	C 6210-223-9602	III
Liquid	-9666	III
	-9667	III
	-9673	III
Soda Acid	-289-1540	V
FLUX WELDING		
Aluminum and Aluminum Alloy	C 3432-253-4576	III
	-4575	III
	-4576	III
FORMALDEHYDE SOLUTION 40%		
Food Ingredient	C 6810-291-8391	IV
	-8392	IV
Photographic	C 6505-276-6732	IV
	-277-1415	IV
COLD SIZE (Varnish)	C 5010-290-6655	II
HYDROGEN PEROXIDE		
Technical (30%)	C 6810-282-9703	IV
INDICATORS		
Copperion Control	C 6820-243-4513	I
INSTITUTION, PICKLING CHEMICAL		
Passing Liquid	C 6850-253-0838	V
Non-foaming Liquid	-0840	V
INSECTICIDES		
Colloidal	C 6810-270-8262	II
Concentrate	-8263-0530	II
Solution (25)		
DSP		
Dusting Powder	C 6800-274-9415	IV
Deterging		
Alphabetic Listing	17	Enclosure (2)

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 24 of 45 PageID
#: 653

5100-3
SEARCHED [initials]
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
INSECTICIDES (Cont.)		
Insect	0 6810-210-350	III
Emulsion Concentrate	-252-3002	III
and Lindane	-216-6132	III
Powder	-285-4307	IV
Concentrate	-262-4221	III
Water Dispersible (75% DDT)	-4222	III
Solution	-261-6693	III
Airplane spray and fog	-281-1442	III
Shore use only	-170-1610	III
Spray	-281-1990	III
Meldrin	-265-2147	III
Lead Arsenite	-261-9043	IV
Lime Sulfate	-265-4315	IV
Lindane	-277-1254	III
Bleaching Sulfate Solution	-261-6693	II
Food Preservative Solution	-161-2024	II
Sodium Fluoride	-210-4227	IV
LAQUERS		
Brushing	0 6010-145-4763	II
Battery Deck Covers Covers	-166-1605	II
Copper and Brass	-166-1639	II
Spraying		
Acid Resisting	-1700	II
	-290-6158	II
General Purpose		
Clear	-165-6111	II
Pigmented	-6113	II
	-6116	II
	-6121	II
	-6123	II
	-6124	II
	-6126	II
	-6127	II
	-6128	II
	-6130	II
	-6132	II
	-6135	II
	-6136	II
	-6137	II

21

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 25 of 45
#: 654

57-00-8
SEARCHLIST 654A.1
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
LACQUER (Cont.) Pigmented (Cont.)	0 6010-245-6139 -6140 -6141 -169-7068 -171-1504 -237-5363	II II II II II II
LAUNDRY SOUR	0 7930-252-0509	IV
LEAD ACETATE	0 6010-305-1323	III
LIME CHLORINATED	-212-4768 -235-0174 -2476 -281-4227	IV IV IV IV
MINERAL	0 6010-255-3434 -3450 -290-0017 -0018 ■ 51-34-827	II II II II
NAPHTHA Aromatic, Petroleum	0 6010-241-7637 -7638 -7639	II II
Coal tar	-1207 -1208 -1209 -1210 -1211	II II II II II
Petroleum Precipitation	-238-7702	II
NAPTHALINE	0 6010-370-4718 -264-9061	III
NEUTRAL Ammonium Sulfate Chloride Sulfate	0 6010-171-1504 -1615 -236-5469	III III III

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 26 of 45 PageID
#: 655

57-00-8
SEARCHED 6840-3
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
LACQUER (Cont.) Pigmented (Cont.)	0 6010-155-6139 -6140 -6141 -155-7088 -171-1508 -357-5383	II II II II II II
LAUNDRY SOUP	0 7930-252-0509	IV
LEAD ACETATE	0 6510-285-1323	IX
LIDS CHLORINATED	-262-4768 -255-0478 -0476 -261-4217	IXV IXV IXV IXV
MERCURE	0 6510-285-5231 -3150 -290-0017 -0016 II 51-4-827	III III III III II
MAYPOLE Aromatic, Petroleum	W 6310-244-7637 -7638 -7639 -1207 -1208 -1209 -1210 -1211 -235-7702	II II II II II II II II
Coal tar		
Petroleum Precipitation		
MAYTHALONE	0 6510-270-4718 -264-9001	III III
MECHIL		
Ammonium Sulfate	0 6510-175-1514	II
Chloride	-1515	II
Sulfate	-236-5469	II

Case 1:11-cv-00406-JEK-BLP Document 8-20 Filed 06/30/11 Page 27 of 45 PageID
656

5/60.5
SEARCHED - INDEXED - SERIALIZED - FILED
24 September 1956

Description

WATER CAGE

<u>Stock No.</u>	<u>Label</u>
G 6610-270-9984 -9985	V V

OFFSETMASTER SOLUTION

G 6850-285-Stock	V
------------------	---

PAINT

NOTE: All Paints will bear Label No. I
except those in the following categories:

Anti-fouling	G 5010-290-4698	II
Cold plastic	-291-5266	II
	-5367	II
Hot plastic shipbottom	-285-7501	II
Natural Rubber	-286-4177	II
Vinyl	-290-4267	II
	-6652	II
	-6656	II
Anti-smut Fire-Retardant		
Exterior		
Alkyd, Hospital Ship	-283-0396	II
Alkyd, Naval Shipboard Use	-285-8278	II
Pull Gloss, General Purpose	-290-4019	II
	-1050	II
	-1053	II
	-6648	II
Shore Use, Exterior	-271-1060	II
	-1061	II
Pull Gloss, Shore Use	-286-8490	II
Phenolic, Submarine use	-3943	II
	-3944	II
Rubber, Solvent type	-271-1062	II
	-1063	II
	-1064	II
	-1065	II
	-1066	II
	-1067	II
Semi-gloss, Shore use	-286-8491	II
Vinyl-Alkyd, Shipboard use	-290-4258	II
	-289-	II
	-286-9062	II

Case 1:11-cv-00406-JEK-BLP Document 8-20 Filed 06/30/11 Page 28 of 45 PageID #: 657

59
SEMAVIST 6000.3
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
PATENT (Cont.)		
Vinyl-Alkyd, Submarine use	G 6810-385-7023 -7014 -7016 -7019 -1893 -1896	II II II II II
Interior, fire-retardant	-286-7831 -7834 -7835 -9091 -290-2875 -2876 -2875-1872 -1895 -1899 -1873	II II II II II II II II II
Stripping		
Zinc dust	-290-6615	IV
<u>Note: The following paints require no labeling of any kind:</u>		
Water Base Paste	G 6810-282-2623 -285-4668 -286-0588 -0589 -0590 -0591 -0592 -0593 -0594 -0595 -0596 -0597 -0598 -0599	Not Req'd Not Req'd
Portland Cement	-286-7721 -7722	Not Req'd Not Req'd
White pigment	-390-3049	Not Req'd Not Req'd Not Req'd Not Req'd
PARAFORMALDEHYDE FLAKE	G 6810-285-1322	III
PHENOL, TECHNICAL (Carbolic Acid)	G 6810-174-1612 -1613	IV IV

Case 1:11-cv-00406-LEK-RJP Document 8-20 Filed 06/20/11 Page 20 of 45 PageID
658

5700.4
SHEAVENST 624613
26 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
PHOTOGRAPHIC CHEMICALS		
Deep Etch Lacquer Solution	0 6850-275-5988	II
Deep Etch Shellac Solutions	-201-2719	I
Plate Etch Solution	-1062	V
Zinc Plate Deep Etch Solution	-2026	V
PIGMENT		
Antimony, Oxide Dry	0 6810-267-6713	III
Chrome Green Dry	-153-0508	III
Chrome Green Paste	-267-8719	III
Chrome Orange Dry	-4335	II
Chrome Yellow (Medium) Dry	-227-1507	III
Chromic Oxide Dry	-216-0702	III
Diatomaceous Silica Dry	-217-4309	III
Litharge Dry	-5709	III
	0 6810-2124310	III
	-4311	III
	-4313	III
Mercuric Oxide, Dry	0 6810-117-6316	IV
Red Lead Grade A Dry	-4318	III
Red Lead Grade C Dry	-227-1508	III
White Lead Basic Carbonate Paste	-267-4351	II
	-4352	II
White Lead Basic Carbonate Dry	-2712	III
Zinc Chromate Insoluble Dry	-227-3596	III
Zinc Dust Dry	-267-4321	III
Zinc Yellow (regular) dry	-267-4324	III
PRESERVATION		
Cyanide JCS	0 6810-290-3841	IV
Bichromate Technical		
Metal Pickling	-291-0637	II&IV
Photographic	-266-6717	II&IV
Ferricyanide Photographic	0 6850-178-5855	IV
Hydrazides		
Lithium Solution (Electrolyte)	0 6850-274-5202	V
Solutions (CO ₂ Absorption)	0 6810-285-7086	V
Technical ("rustic Potash")	-230-7951	V
	-3553	V
	-261-9827	V
Permanonate 1/2P	0 6805-297-1128	I
PRESERVATION-SOLUTION CONCENTRATES		
None See Coast	0 6830-264-1126	IV

Case 1:11-cv-00406-JEK-RLP Document 8-20 Filed 06/30/11 Page 30 of 45 PageID

5500-5
SEARCHED 42403
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
PRIMER		
Alkyd-Resin Steel	G 6010-165-5558	II
Anti-corrosive Shipbottom	-214-5793	I
	-5794	I
Asphalt	G 6030-165-5559	II
Dark Green Metal	G 6010-165-7582	II
	-7083	II
Exterior Wood	-165-5566	II
Interior Wall Primer-Sealer	-5569	I
	-5570	I
Lacquer-Enameling Synthetic	-272-1127	II
Maintenance Exterior	-165-5573	II
	-5574	II
Pretreatment Coating for Metals	-281-7399	II
Red Lead + Linseed Oil	G 6010-165-5577	DAY
	G 6010-214-5791	II
	-5792	II
Synthetic Metal and Wood	-161-5713	II
	-7125	II
Undercoat for Wood Decks	-165-5568	II
Vinyl, Red Lead	-270-0773	II
Vinyl, Zinc Chromate	-0374	II
Zinc, Chromate	-161-7119	II
	-165-5557	II
Zinc, Dart-Giles Urethane	-5560	II
	-5561	II
PUTTY		
	G 6030-213-0952	II
	-0953	II
	-0959	I
	-0958	III
SWIMMING TECHNICAL	G 6010-281-2785	II
SHOWER		
Fingernail	V 6030-252-8300	I
	-8301	I
Paint and Varnish	G 6010-160-5300	II
	-165-4447	II
	-286-2860	II
	-2861	II
BEDDING		
Satinette	G 6010-281-2036	I
	-2037	I

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 31 of 45 PageID
#: 660

5/100 S
RECEIVED -4340-3
26 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
TAR, COAL	G 6810-381-4939 -4940	V V
TETRACHLOROETHANE	G 6810-241-9015	IV
TETRACHLOROETHYLENE	G 6810-270-9982	III
TETRABORON PHOSPHATE	G 6810-219-5038	V
THINNER	752-T-563-9980	H
Dipetene	G 6810-381-9579	H
Dope and Lacquer	G 6810-160-5787	H
	G 6810-160-5792	H
Paint, Mineral Spirits	G 6810-212-2056 -206-6113 -6114	H H H
Stringable Plastic Coating Compound	-165-5585	H
Synthetic Resin Enamel	W 6810-160-5794 -5795 -165-5583 G 6810-165-5584	H H H H
TOLUENE (TOLYL)	W 6810-281-2005 -2006	H H
TRICHLOROETHYLENE	G 6810-124-4776 -1200	III III
TRICHLOR PHOSPHATE	G 6810-281-7178	III
TERBUTON PHOSPHATE	G 6810-219-2116	
TERPENTINE	G 6810-216-6145 -211-4126 -210-1140	H H H
VARnish		
Asphalt	G 6810-160-5856 -299-0214	I I
Electrical Insulating		
General Purpose	G 5970-166-1675 -1676 -1677 -1678	I I I I

22

Case 1:11-cv-00406-LEK-RIP Document 8-20 Filed 06/30/11 Page 32 of 45 PageID
661

5/00. ✓
SEARCHED, SERIALIZED
24 September 1976

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
VARNISH (Cont.)		
Electrical Insulating		
General Purpose (Cont.)	6 5970-166-1679	I
	-1680	I
	-1681	I
	-1682	I
	-1683	I
	-1684	I
	-1685	I
	-1686	I
	-1687	I
	166-7228	I
High Temperature	166-1691	I
	-1696	I
Interior	6 8030-161-7224	I
	-165-1408	I
	-165-1409	I
Fenolic		
General Purpose	-166-1659	II
	-23-5176	II
	-251-6980	II
Motorboat	-166-1673	I
	-1674	I
Shallow cut		
Bleached	-166-1761	I
	-1762	I
Orange	-166-1728	I
	-166-1765	I
	-6073	I
Spur Glorification	-160-5832	I
	-165-14332	I
WATER TREATMENT COMPOUND	6 6850-250-2626	IV
	-2627	IV
WOOD PRESERVATIVE COMPOUND	6 8030-261-2717	II, IV
	-2718	II, IV
XEROX (XEROL)	6 6810-270-4145	II
	-4146	II
	-4147	II

Case 1:11-cv-00406-LEK-RLP Document 8-20 Filed 06/30/11 Page 33 of 45 PageID
#: 662

5/00.5
REGRADING 4340.3
24 September 1956

<u>Description</u>	<u>Stock No.</u>	<u>Label</u>
ZINC Cyanide Dust Phosphate	0 6100-362-5704 -227-1851 0 6100-360-1264	III III

Enclosure (2)

28

Alphabetical Listing

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 24 of 45 Page ID #: 663

SEARCHED
SERIALIZED
INDEXED
FILED
24 September 1956

<u>Former No.</u>	<u>FSN No.</u>	<u>Date</u>	<u>Label</u>
0 6114-187-500	0 6110-101-4268	11	III
-409	-6257	11	III
-500	-6266	11	III
-505-1260	0 6110-230-6101	11	V
-2119	0 6110-101-4195	11	V
-2120	-6764	11	V
-2121	-229-2735	11	V
-2122-5	-276-1215	11	V
-2123-8	-284-3918	11	V
-2124-942	-3939	11	V
-2125-850	-317-1636	11	V
-2126-80	-214-3664	11	V
-2127-6	-221-3659	11	V
-2128-100	-3431	11	V
-2129-110	-228-5885	11	V
-2130	-282-6545	11	V
-2131-9607	-238-1071	11	V
-2132-9607	-223-9605	11	V
-2133-9607	-238-3670	11	V
-2134-9607	-5653	11	V
-2135-9607	-234-3957	11	V
-2136-9607	-6712	11	V
-2137-9607	-239-3667	11	V
-2138-9607	-146-1820	11	V
-2139-9607	-230-3858	11	V
-2140-9607	-234-3723	11	V
-2141-9607	-6124	11	V
-2142-9607	-6726	11	V
-2143-9607	-6726	11	V
-2144-9607	-231-6068	11	V
-2145-9607	-6037	11	V
-2146-9607	-146-1820	11	V
-2147-9607	-230-3858	11	V
-2148-9607	-234-3723	11	V
-2149-9607	-6124	11	V
-2150-9607	-6726	11	V
-2151-9607	-231-6068	11	V
-2152-9607	-6037	11	V

Appendix

29

Enclosure (2)

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 35 of 45 PageID #: 664

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 36 of 45 PageID #: 665

<u>Part No.</u>	<u>FAX No.</u>	<u>Date</u>	<u>Label</u>	<u>Part No.</u>	<u>FAX No.</u>	<u>Date</u>	<u>Label</u>
061-1-118-60	0 6010-265-0478	19	11W	061-1-1050	0 6010-243-0354	24	IV
-355-10	-242-6760	19	1AV	-11810	0 7330-251-2936	24	V
-421-260	0 6010-226-5188	22	II	-1182	-2169	24	V
*560	0 6010-241-2088	22	V	-1184	-3000	24	V
061-1-150	0 6010-259-3152	19	11W	0 6010-243-0455	24/25	V	
-821-150	-243-4234	19	11W	-2000	-174-6581	21/25	V
-821-150	-243-4234	19	11W	-2001-20	-244-8236	21/25	V
-821-150	-243-4234	19	11W	-2004-50	-235-1716	24	V
-821-150	-243-4234	19	11W	-2006-100	-1715	24	V
-821-150	-243-4234	19	11W	-2006	-227-2863	24	V
-821-150	-243-4234	19	11W	-2007	-161-5050	13/24	IV
-821-150	-243-4234	19	11W	-3001-500	-210-8110	24	V
-821-150	-243-4234	19	11W	-3000	-154-8716	24	V
-821-150	-243-4234	19	11W	-3000	-201-3165	24	V
-821-150	-243-4234	19	11W	-3005	-220-5800	24	V
-821-150	-243-4234	19	11W	-3118-10	-290-4170	24	V
-821-150	-243-4234	19	11W	-3118-10	-281-5866	25	V
-821-150	-243-4234	19	11W	-3118-10	-4880-240-2121	24/25	V
-821-150	-243-4234	19	11W	-3211-500	0 6010-281-5050	25	V
-821-150	-243-4234	19	11W	-3211-500	-174-6585	25	V
-821-150	-243-4234	19	11W	-3209	-161-7170	25	IV
-821-150	-243-4234	19	11W	-3209	-200-3435	25	IV
-821-150	-243-4234	19	11W	-3209	-251-7977	25	IV
-821-150	-243-4234	19	11W	-3209	-260-2121	25	V
-821-150	-243-4234	19	11W	-3209	-3340-281-4241	24/25	V
-821-150	-243-4234	19	11W	-3209	0 6010-210-5057	25	V
-821-150	-243-4234	19	11W	-3209	-365-160	25	V
-821-150	-243-4234	19	11W	-3209	-365-1402	25	V
-821-150	-243-4234	19	11W	-3209	0 6010-270-5059	24/25	V
-821-150	-243-4234	19	11W	-3209	-385-1004	25	V
-821-150	-243-4234	19	11W	-3209	-4558	25	V
Appendix		31		Enclosure (2)			

Case#11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 37 of 45 PageID#:

5-196.6
SEARCHED 62607
24 September 1956

Enclosure (3)

52.

Lippes

Casa 1:11-cv-00406-JEK-RLR Document 8-20 Filed 06/30/11 Page 38 of 45 PageID #: 667

Appendix

33

Enclosure (2)

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 39 of 45

Case 1:11-cv-00406-LEK-RLP Document 8-20 Filed 06/30/11 Page 40 of 45 PageID #: 669

JULY 20, 1957
SILKAVIST 6260-3
24 September 1956

Case 1:11-cv-00406-LEK-RLP Document 8-20 Filed 06/30/11 Page 41 of 45 PageID #: 670

~~SEARCHED~~
SEARCHED 4240-7
24 September 1956

Case 1:11-cv-00406-JEK-RJP Document 8-20 Filed 08/20/11 Page 13 of 14 Page ID #: 671

5-10-9
SEARCHED 6250-7
24 September 1956

Enclosure (3)

SICKAV.IVST 6460.1
24 September 1956Elements of a Labeling Program

a. General. All materials should be labeled whether or not they are considered toxic, flammable, or explosive. This is desirable, not only to prevent untoward incidents but also to conserve material which would otherwise be discarded and wasted if unlabeled. Hazardous chemicals and materials within the scope of this instruction have been grouped into six general classifications defined as follows:

b. Class I. Fire Hazard (Flammable). Any material which alone or in combination with other materials may produce a danger of fire or explosion (such as the strong oxidizing agents, perchlorates, peroxides, naphthalene, acetone, ether, etc.).

c. Class II. Toxic and Fire Hazard. Any material which presents a combined hazard due to its flammability (Class I) and its toxicity (Class III).

d. Class III. Toxic. Any industrial or military material which may give off a harmful vapor, dust, fume, or mist during handling; or operations. The injurious effect may arise from one exposure (acute) or from repeated exposures over a prolonged period (chronic). The mode of entry into the body may be by ingestion, inhalation, or absorption through the skin. Examples of this class are chlorinated hydrocarbons (carbon tetrachloride, tetrachloroethylene, trichloroethylene), chlorinated diphenyls, compounds of cadmium, mercury, chromium, lead, and organic phosphorus compounds.

e. Class IV. Poisonous. A poison is commonly understood to be a product which will lead to fatal results in a short period of time when taken into the body. Oral intake is the primary mode of entry into the body. It is now recognized that other routes such as inhalation and absorption through the skin may produce the same effect as oral ingestion of some materials. Examples of this category are cyanides, arsenicals, carbon disulfide, and dimethyl sulphate. Some of these materials may give off a deadly vapor when mixed with acids; e.g., cyanides and acids.

f. Class V. Corrosive. Agents which in contact with tissues of the body surface will cause injury or destruction of those tissues. Among these are corrosive agents such as hydrochloric, acetic, nitric, and sulfuric acids; and sodium, potassium, and ammonium hydroxides.

Enclosure (3)

Case 1:11-cv-00406 LEK -RLP Document 8-20 Filed 06/30/11 Page 44 of 45 PageID #: 673

JULY 1964
SECNAVINST 4260-3
24 September 1956

1. Class VI. Radioactive Hazard. Hazardous materials or chemicals which emit alpha, beta, gamma, or neutron radiations, or which may give off dusts, fumes, gases, or vapors emitting these radiations.

2. It may be necessary on occasions for qualified investigators to work with new products before adequate chemical, physical, and toxicological data are available. To cover such cases, and such cases only, the following guide is suggested for preparing labels to be used during the period of investigation:

(NAME OR DESCRIPTION OF PRODUCT)

FOR INVESTIGATIONAL USE ONLY

STATEMENT OF KNOWN HAZARDS

(Appropriate precautionary measures;
(Appropriate instructions in case of contact or exposure.)

IMPORTANT! The chemical, physical, and toxicological properties of this product have not been fully investigated and its handling or use may be hazardous.

EXERCISE DUE CARE.

3. The elements of an effective labeling program consist of:

a. Establishment of a Chemical Control Committee.

b. Uniformity of labeling.

c. Indexing of materials and their labeling category.

d. Proper labeling by the local supply department.

e. Proper labeling by the using unit where transfer is made to smaller containers.

f. Educational programs.

4. A Chemical Control Committee or equivalent thereof should be established at each activity to administer the technical phases of the labeling program for the local activity and to make revisions as necessary to keep the program current. Directives should be prepared by the Chemical Control Committee for promulgation by the commanding officer. These should be based on Bureau instructions.

Case 1:11-cv-00406-LEK -RLP Document 8-20 Filed 06/30/11 Page 45 of 45
674

5-60-P

SENAVINST 6240.3

24 September 1956

and should be tailored to suit the needs of each activity. The size and nature of the activity will be major factors in determining whether this Committee will be a formal organization composed of cognizant personnel; or whether it will consist of one individual to whom this additional responsibility is delegated.

5. To provide uniformity of labeling throughout the Naval Establishment a "Label Classification Guide" showing the proper labels to be employed for hazardous materials will be published in U. S. Navy Safety Precautions (OPNAV 34-PI). A supplementary list of all new or proprietary materials will be compiled periodically, and will be published in OPNAV 34-PI. To supplement the listings in OPNAV 34-PI a tentative labeling category, agreed upon by the Chemical Control Committee or equivalent thereof, should be established for each new or proprietary material brought in for use at the local activity. If any given new material presents more than one type of hazard, the label properly identifying each hazard should be affixed to the container. Assistance in regard to the classification of new or proprietary chemicals may be obtained from the management bureaus.
6. The supply officer of each activity shall be responsible for the proper labeling of all containers of hazardous materials on receipt of these materials.
7. Supervisory personnel shall be responsible for the proper labeling of any containers to which hazardous materials may be transferred after issue by the Supply Department.
8. Cognizant management personnel shall institute an educational program to thoroughly familiarize employees with the labeling program, paying particular attention to the significance of the color coding, the insignia, and key words, on each category of label.

C20543

Enclosure (1)

Exhibit 24

Case 1:11-cv-00406-LEK -RLP Document 8-8 Filed 06/30/11 Page 1 of 16 PageID#:

Fifth Edition (Fourth Revision)

WARNING LABELS

*A Guide for
the Preparation of
Warning Labels for
Hazardous Chemicals*

MANUAL L-1

FOURTH REVISION - 1956

Published by
**MANUFACTURING CHEMISTS
ASSOCIATION, INC.**

Mail the Record Card

When you receive this manual, please fill out the provided box. A record of those holding manual distribution of supplements or notices, if any, will be kept by the manufacturer.

MANUFACTURING CHEMISTRY LOCATIONS

1625 Eye Street, N.W.
WASHINGTON 6, D.C.

For your future reference, record here the name and address given below.

MANUFACTURING CHEMISTS' ASSOCIATION, INC.
1625 Eye Street, N.W.
WASHINGTON 6, D.C.

Gentlemen:
I have a copy of the HCA Manual L-1,WARNING LABELS—4th Edition—
1956. Please send me any supplements or notices relating thereto. I should like
to be advised when a new edition is printed.

Name _____

卷之三

Cambridge University Press

Digitized by srujanika@gmail.com

Case 1:11-cv-00406-LEK-RLP Document 8-8 Filed 06/30/11 Page 3 of 16 PageID #: 128

PLEASE

MAIL RECORD CARD

NOW

STAMP
HERE

MANUFACTURING CHEMISTS' ASSOCIATION, INC.

1625 EYE STREET, N.W.

WASHINGTON 6, D.C.

WARNING LABELS

A Guide for the
Preparation of Warning Labels
for Hazardous Chemicals

MANUAL L-1

Fourth Revision—1956



PRICE ONE DOLLAR

Published by
MANUFACTURING CHEMISTS' ASSOCIATION, INC.
1625 EYE STREET, NORTHWEST, WASHINGTON 6, D. C.

Contents

	PAGE
Introduction	5
Terms as Used in This Manual	7

PART I

Preparation of Warning Labels

General Principles	10
Preparation of Labels	
General	11
Use of Table I by Specific Example	14
Table I Selection of Precautionary Statements	16, 17
Labels for Small Commercial Packages	18
Labels for Samples and New Products for Investigational Use	19
Container Handling and Storage	20
Aerosol Containers	21

PART II

Illustrative Warning Labels for Industrial Chemicals

Preface	23
Product Labels	24
MCA Safety Data Sheets	23, 78

The information, recommendations and illustrative labels contained in this Manual have been compiled from sources believed to be reliable and to represent the best current opinion on the subject. No warranty, guarantee or representation is made by the Association as to the absolute correctness or sufficiency of any information, recommendation or illustrative label contained in this Manual, and Manufacturing Chemists' Association, Inc. assumes no responsibility in connection therewith; nor can it be assumed that all warnings and precautionary measures are contained in this Manual, or that other or additional measures may not be required under particular or exceptional conditions or circumstances.

PART III

Illustrative Warning Labels for Pesticides

Preface	79
Product Labels	82

WARNING LABELS

A Guide for the Preparation of Warning Labels for Hazardous Chemicals

Introduction

THE DEVELOPMENT of new chemical products and the introduction of chemical processes into ever-widening fields have accentuated the need for furnishing appropriate information in those cases where there are hazards requiring special precautions. Precautionary information should, so far as practicable, reach every person using, handling, or storing chemicals. The most practical means for the seller to disseminate this information appears to be by warning labels affixed to containers of hazardous chemicals, bearing appropriate precautionary statements expressed as simply and briefly as circumstances permit. Such labels, however, cannot take the place of the education of employees regarding chemical hazards and the use of safety clothing and equipment which are and must remain the direct responsibility of employers; nor can the wording on these labels be expected to cover complete information as to the properties of the chemicals nor the complete details for handling chemicals under all conditions. Such information may be found in producers' technical bulletins or in the Manufacturing Chemists' Association's Chemical Safety Data Sheets.

Many chemicals present no hazards in normal handling and storage and for these products no precautionary statements are necessary on the label.

To achieve uniform and more adequate labeling of hazardous chemical products, the Labels and Precautionary Information (LAPI) Committee of the Manufacturing Chemists' Association, Inc., has prepared this Manual for the benefit and guidance of its members. Part I sets forth principles for the preparation of warning labels. Part II contains suggested warning labels for specific chemicals illustrative of the application of these principles. Part III contains suggested warning labels showing the application of the principles of Part I to a group of chemical products used in the pesticide (economic poisons) field.

The Surgeon General of the United States Public Health Service has discontinued the labeling agreements entered into some years ago with the manufacturers of a few specific chemicals. This was done because today adequate precautionary labels are in very general use by chemical manufacturers. The United States Public Health Service has approved the principles of precautionary labeling developed by the Manufacturing Chemists' Association, Inc., and will continue its interest in this field in cooperation with the Association. It is felt that cooperation on the present broad basis will best serve the purpose intended when the earlier more specific agreements were made.

Individual statutes, regulations or ordinances may require that particular information be included in a label or that a specific label be affixed to a container, but for the most part these labels follow LAPI principles. In each case, the requirements of these laws should be studied. *The warning labels suggested in this Manual should be used in addition to, or in combination with, any label required by law.**

*Federal statutes and regulations affecting the labeling of chemical materials include *Federal Caustic Poisen Act* and regulations; *Federal Insecticide, Fungicide, and Rodenticide Act* and regulations; *Federal Food, Drug and Cosmetic Act* and regulations; *Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles and others*. Copies are obtainable at nominal cost from the Superintendent of Documents, Washington, D. C., or directly from the agencies that administer the laws. State and local governments frequently regulate labeling through statutes, ordinances, and regulations affecting industrial chemicals; poisons; insecticides, fungicides, rodenticides, and herbicides; foods, drugs, and cosmetics; agricultural and horticultural materials; the practice of pharmacy; and other subjects. Copies are usually obtainable from state or local Departments of Health, Agriculture, Pharmacy, or other regulatory agencies.

Terms as Used in this Manual

Dust²—Solid particles generated by handling, crushing, grinding, rapid impact, detonation and decomposition of organic or inorganic materials such as rock, ore, metal, coal, wood, grain, etc. Dusts do not tend to flocculate except under electrostatic forces. They do not diffuse in air but settle under the influence of gravity.

Fume²—Solid particles generated by condensation from the gaseous state, generally after volatilization from molten metals, etc., and often accompanied by a chemical reaction such as oxidation. Furnaces, flocculate and sometimes coalesce.

Mist²—Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state, such as by splashing, foaming and atomizing.

Gas—A normally formless fluid which occupies the space of enclosure and which can be changed to the liquid or solid state by the effect of increased pressure or decreased temperature or both. A gas diffuses.

Vapor—The gaseous form of a substance which is normally in the solid or liquid state. A vapor diffuses.

FLAMMABLE LIQUID¹—Any liquid which gives off flammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 80°F.

EXTRINSIC FLAMMABLE LIQUID—Any liquid which gives off flammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 20°F.

CORROSIVE (Physiological)—An agent which in contact with living tissue will cause more or less severe destruction of tissue by chemical action. As used in warning labeling, the term "corrosive" refers to action on living tissue and should not be confused with action on inanimate surfaces such as metals, glass or wood.

IRRITANT (Physiological)—An agent which in contact with living tissue will induce either immediately or after prolonged or repeated contact a more or less severe local tissue reaction not leading directly to destruction of tissue.

Sensitizer (Physiological)—A material which, as ordinarily handled does not necessarily cause any discernible reaction in living tissue but which after initial or repeated contact with the tissue of some individuals may, at a later date, produce a prompt inflammatory reaction on contact, even in minute amounts, with the tissue of the same individuals.

Poison² Note: The true determination of the "poisonous" properties of a chemical or mixture of chemicals must be based on its effect on humans. The collection of adequate data from human experience is usually impossible. In the absence of such data it is desirable to establish for labeling purposes some arbitrary standard based on past experiences and some methods of testing which will permit the presumption of the possible hazards inherent in a given product. The use of laboratory animals for this purpose is now considered the most reliable method generally available when conducted under controlled conditions.

A poison is commonly understood to be a product, contact with which will lead to fatal results, usually in a short period of time. Generally only oral intake has been considered. It is becoming more generally recognized, however, that other modes of contact or routes of entry, in particular inhalation and absorption through the skin, may have similar fatal effect. Any use of the term should, therefore, consider these three common routes of entry.

—A chemical or mixture of chemicals which falls within any of the following categories:

- (a) Produces death within 48 hours in half or more than half of a group of 10 or more laboratory white rats weighing 200-300 grams at a single dose of 50 milligrams or less per kilogram of body weight, when administered orally; or
- (b) Produces death within 48 hours in half or more than half of a group of 10 or more laboratory white rats weighing 200-300 grams, when inhaled continuously for a period of one hour or less at an atmospheric concentration of 2 milligrams or less per liter of gas, vapor, mist, or dust, provided such concentration is likely to be encountered by man when the chemical product is used in any reasonably foreseeable manner; or
- (c) Produces death within 48 hours in half or more than half of a group of 10 or more rabbits tested in a dosage of 200 milligrams or less per kilogram body weight, when administered by continuous contact with the bare skin for 24 hours or less.

If available data on human experience with any chemical in the above-named concentrations indicate results different from those obtained on animals, the human data shall take precedence.

Toxicity—The inherent capacity of a substance to produce bodily injury by other than physical means.

Hazard—The risk of injury, illness, or damage that is encountered during reasonably anticipated handling and use of a substance. Hazard is determined by such factors as toxicity, physical characteristics and conditions of use and may not be in direct proportion to toxicity alone.

Mixture—A physical commingling of two or more substances which may or may not bear a fixed proportion to one another and which have not reacted chemically with one another.

Economic Poison—Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insect, rodent, fungi, weeds, and other forms of plant or animal life or viruses, except viruses on or in living man or other animals, which the Secretary (of Agriculture) shall declare to be a pest.

Pesticide—Same as Economic Poison.

1. Corresponds to ICC definition.
2. As defined in Chapter II "Engineering Control of the Air Contamination of the Working Environment" (Allen D. Brandt, D.Sc.) page 198, "Manual of Industrial Hygiene," USPHS.
3. Substantially identical with ICC Poison Class B definition and similar in most respects to regulations under the Federal Insecticide, Fungicide and Rodenticide Act.
4. From Federal Insecticide, Fungicide and Rodenticide Act. It should be understood that there are laws, ordinances, and regulations in certain states which declare to be pests things which may not be so considered at present under the Federal Act.

PART I

Preparation of Warning Labels

General Principles

In preparing warning labels, the following general principles should serve as a guide:

- (1) Each chemical product presents a distinct problem and must be treated individually in the light of its own characteristics. Conclusions regarding the hazards of a product cannot safely be drawn either from the properties of the materials from which it is formed or by analogies based upon chemical structure.
- Mixtures of two or more chemicals may have properties that vary in kind or degree from those of the individual components. Any warning label for mixtures should be based on the properties of the finished product.
- Impurities may contribute hazardous properties and should not be overlooked.

- (2) All statements on warning labels should be brief, accurate, and expressed in simple, easily understood terms.
- (3) Precautionary labeling should be used only when and to the extent necessary. The language should be practical, not based alone upon the inherent properties of a product, but directed toward the avoidance of hazards resulting from such use, handling and storage as may reasonably be anticipated. The use of warning labels for relatively harmless products or the use of unnecessary words will develop a disregard for labels and defeat their purpose as surely as will failure to give adequate notice of hazards.

- (4) On labels for different products, uniformity in language to indicate the same hazards and same degree of hazard is most desirable in order to gain greater understanding through standardization.

- (5) The following subject matter should be considered for inclusion on a warning label:
 - A. Name of Product
 - B. Signal word designating degree of hazard--DANGER!, WARNING!, or CAUTION!

- C. Affirmative statement of hazards.
- D. Precautionary measures covering actions to be followed or avoided.
- E. Instructions in case of contact or exposure, where advisable.
(Note: Under some laws antidotes are required when the word "POISON" is used.)

Instructions for the handling and storage of containers should also be considered for inclusion on the label. This is information relating to characteristics of the container as well as those of its contents, and is discussed separately under *Container Handling and Storage Instructions*, page 20.

- (6) The inclusion of the word "POISON" and the skull and crossbones on a label should be limited to those cases where the product is a poison according to a definitive toxicity standard* or where such use is prescribed by law. When used, this legend should be in addition to the other label warnings and should not take the place of the signal words DANGER!, WARNING!, and CAUTION! which are designed to show the relative degree of hazard.
- (7) A non-descriptive code designation or trade name should not be used as the only identification of a hazardous chemical. If the complete chemical name is not shown, the label should clearly state the type of chemical, e.g., "corrosive acid," "lead compound."
- (8) Warning statements should be grouped together in a prominent location on the label and should be printed in easily legible type which is in contrast by typography, layout, or color with other printed matter on the label. The label should be affixed firmly to and in a conspicuous place on the container.

Preparation of Label

In the preparation of a warning label, the compilation of all available relevant information on the product is a necessary first step. An adequate knowledge of the toxicity of the material (obtained from the literature or through laboratory tests) and data on physical and chemical properties, packaging, and methods of handling and use of the product are needed to make possible a description of the hazards. In the case of an established product advantage should be taken of the experience of people involved in manufacturing, shipping and using

*See terms page 8.

the material. All the *General Principles* should be kept in mind and the following information considered for inclusion on the label:

- A. **NAME OF PRODUCER** This is important information for the safety of handlers and users. It is preferable that the chemical name of the product be used. The recommendations of the American Chemical Society for nomenclature should be followed. Trade names may be used in addition to chemical names. A non-descriptive code designation or trade name should not be used as the only identification of a hazardous chemical. If the complete chemical name is not shown, the label should at least clearly state the type of chemical, e.g., "corrosive acid," "lead compound."
- B. **SIGNAL WORD** This word is intended to draw attention to the presence of hazard, and to indicate the degree of severity. The signal words recommended are, in the order of diminishing severity of hazard:
 - (1) **DANGER!**
 - (2) **WARNING!**
 - (3) **CAUTION!**

Degree of severity can be expressed only in relative terms. "Danger" is the strongest of the three words and should be used for those products presenting the most serious hazards. "Caution" is recommended for those compounds presenting the least serious hazards. "Warning" is intermediate between "Danger" and "Caution." Reference to the illustrative labels in Part II of this Manual will help in the selection of the proper signal word.

- C. **STATEMENT OF HAZARDS** This statement should give notice of the hazards that are present in connection with the customary or reasonably anticipated handling or use of the product. Examples are:

CAUSES BURNS VAPOR EXTREMELY HAZARDOUS

Many chemical products will present more than one type of hazard in which case appropriate statements for each significant type should be included on the label. In general, the most serious hazard should be stated first.

While any compound may be hazardous if improperly used, it is impractical to cover every possible contingency on a label. Efforts should be directed toward giving notice of the significant hazards. A minor hazard may frequently be covered clearly and briefly by an appropriate precautionary statement alone. In some cases the total

hazard of a product, while justifying one or more precautionary measures, may be of such order as to require no statement of hazard on the label.

D. **PRECAUTIONARY MEASURES** These instructions are intended to supplement the statement of hazards by setting forth briefly measures to be taken to avoid injury or damage from stated hazards. Examples are:

Keep away from heat and open flame.

Avoid breathing dust.

Precautionary measures may be included for hazards not considered of sufficient importance to require mention in the statement of hazards.

Statements similar to, "Do not take internally," deserve special attention. They are seldom necessary where the precautionary measure to be followed is obvious as, for example, when the product is labeled "Poison" or the statement of hazards contains the words, "may be fatal if swallowed." On the other hand, the instruction may be desirable if the name, appearance, use or other attributes of the chemical are likely to result in its being taken orally through accident or mistaken identity.

E. **INSTRUCTIONS IN CASE OF CONTACT OR EXPOSURE** The primary purpose of a warning label is to prevent injury or damage. However, instructions in case of contact or exposure may be included in those instances where the results of contact or exposure are severe and immediate treatment is highly desirable, and where simple remedial measures may be taken safely by non-professional persons before medical assistance is available.

Instructions should be limited to recognized first aid procedures based on simple methods and commonly available materials. Instructions for strictly medical treatment should be omitted except when specifically required by law or indicated by special circumstances.

Because of the serious and lasting effects that may result from eye injuries, a recommendation to get medical attention should accompany any specific instructions directed to treatment of the eyes.

In certain instances simple remedial measures such as washing, or removal of clothing, may be included where they will serve to avoid serious injury following contact or exposure.

All precautionary information should appear on the label as a unit and should be printed in the order given above. The labels in Parts II

and III illustrate suitable arrangements and indicate relative prominence that should be given to the individual statements. Such relative prominence may be achieved in a number of ways such as by variation in type size, color, or layout of the printed material.

Note: Some state laws and regulations require, on labels, the use of special or strictly defined antidotes or prescribe special ways in which these must be shown for certain chemicals. The requirements for any given poison may, therefore, vary greatly and the impossibility of showing, in the illustrative labels, antidotes which might be nationally acceptable has led to the practice of indicating only the need for an appropriate "First Aid-Antidote" statement where the "POISON-skull and crossbones" legend is used.

Table I, on Page 16, is intended as a guide in the selection of precautionary statements for warning labels. Listed are classifications of materials according to the hazardous properties most frequently encountered in chemical products. Opposite each classification are given statements of hazard, precautionary measures and, in most cases, instructions in case of contact or exposure. It is important to recognize that chemicals can have inherent in them more than one of such hazardous properties, and that the label wording for such products should include an appropriate combination of the pertinent statements.

As each chemical product must be treated individually in the light of its own characteristics and customary or reasonably anticipated handling or use, there will be many instances in which the illustrative statements in Table I will not be applicable, either because they do not accurately express the degree of hazard or because they fail to cover the particular characteristics. In such cases, suitable statements should be chosen to fit the situation. The illustrative labels in Part II of this Manual may be helpful in the choice of appropriate wording.

Use of Table I by Specific Example

To illustrate the preparation of a specific warning label and the use of Table I in accordance with the principles outlined in the preceding text, Acetyl Chloride may be selected as an example.

Analysis of the physical, chemical and toxicological data shows the major hazards to consist of flammability (flash point between 20°F. and 80°F.), and a severe burning action on living tissue. A chemical property which is of secondary importance is the relatively violent action in contact with water, particularly when small amounts of water are added to large quantities of the chemical. Thus, two major and one minor hazard must be considered.

The selection of the signal word depends on the seriousness of the hazard, the acute rather than chronic action, and to a lesser extent on the number of hazards. In the case of Acetyl Chloride, both major

hazards are serious and acute. Therefore, the signal word "DANGER!" is indicated. (See page 12, II.)

Flammability is covered by Column I, Class I. Since the flash point is between 20°F. and 80°F., Acetyl Chloride falls in "Type I", for which the statement of hazard (Column 2) is:

FLAMMABLE

The second major hazard is the corrosive action on living tissue which is covered in Column I, Class VII. Since the burns that result from contact are serious, the statement of hazard chosen from Column 2 is:

CAUSES SEVERE BURNS

The precautionary measures applying to the flammability hazard are chosen from Column 3. (The parenthetical word "sparks" is usually used only when the flash point is below 20°F.) The statements selected for this product are:

Keep away from heat and open flame.

Keep container closed.

The precautionary measures corresponding to the corrosive action of the liquid and vapor on living tissue, selected from Column 3, are:

Do not get in eyes, on skin, on clothing.

Avoid exposure to concentrated vapor.

The applicable instructions in case of contact or exposure are chosen from Column 4:

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

The minor hazard arising from the relatively violent action of Acetyl Chloride in contact with water is covered by the special precautionary statement:

Do not allow water to get into container.

Assembling the various statements in order, Signal Word, Statement of Hazard, Precautionary Measures, and Instructions in Case of Contact, we have the completed label as follows:

ACETYL CHLORIDE

DANGER! FLAMMABLE

CAUSES SEVERE BURNS

Keep away from heat and open flame.

Keep container closed.

Do not get in eyes, on skin, on clothing.

Avoid exposure to concentrated vapor.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

Do not allow water to get into container.

TABLE 1**Case 1:11-CV-00406-LEK -RLP Document 8-8 Filed 06/30/11 Page 12 of 16 PageID**

Products will be encountered that present hazards varying in kind or degree from I-Hazard. Appropriate statements of hazard, precautionary measures and instructions of contact or exposure should be prepared on the basis of the properties of the product, following the Pattern and General phrasing of the following table. Parenthetical words in the table express variations in kind or degree and are to be used where applicable. SEE EXAMPLE PAGE 14.

Class of Hazard	Statements of Hazard	Precautionary Measures
I. Liquids Flashing at 150°F. or Below [Flash point can be determined by the Tagliari Open-Cup Method]	IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on actual records of use and degree of hazard. In some instances either a mild Selection(s) to be based on necessity for prompt action or a severe Selection(s) to be based on the nature of hazard may be indicated. In some instances the conclusion of a precautionary statement may be justified where the statement to be followed is derived from the statement of hazard.	IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on actual records of use and degree of hazard. In some instances either a mild Selection(s) to be based on necessity for prompt action or a severe Selection(s) to be based on the nature of hazard. In some instances the conclusion of a precautionary statement may be justified where the statement to be followed is derived from the statement of hazard.
A. Flash point 20°F. or below	Keep away from heat (sparks) and open flame. Keep container closed (and away from heat).	In case of contact, immediately flush skin or eyes with plenty of water for (at least) 15 minutes; (or eyes, get medical attention. (Wash clothing thoroughly on inside.) Soak up spillage on once. Rinse or absorb spillage with ...
B. Flash point above 20°F. to 80°F. Inclusive		In case of contact, immediately flush skin or eyes with plenty of water for (at least) 15 minutes; (or eyes, get medical attention. Remove and wash clothing before re-use. [See NOTE above]
C. Flash point above 80°F. to 150°F. Inclusive		
II. Oxidizing Agent	Strong Oxidant Contact with Combustible (Other) Material May Cause Fire	Sieve separately (away) from and avoid contact with combustible (other) material. Avoid contamination of clothing as it becomes damp. Seriously损傷 when dry. Keep container closed (and away from heat). Avoid contact with skin and eyes.
III. Materials Giving Vapors Highly Irritating or Extremely Irritating on Exposure for a Short Time or to Low Concentration	Vapor [Extremely] Hazardous [Irritating] Hazardous Liquid and Vapor (Gas under Pressure) Vapor Potentially Flammable Vapor May Be Fatal If Inhaled [See NOTE opposite page]	Do not breathe vapor. Do not get in eyes, on skin, on clothing. Use only with adequate ventilation. Keep container closed (and away from heat). Have air line respirator or self-contained oxygen respirator available for emergency.
IV. Materials Giving Vapors Irritating on Exposure to High Concentration	Vapor Irritated Causes Irritation of Eyes, Nose, and Throat	The only with adequate ventilation. Avoid (prolonged or repeated) breathing (to) vapor. Avoid contact with skin, eyes, and clothing. Keep container closed (and away from heat).
V. Gases and Vapors Physiologically Inert	Gas (Vapor) Reduces Oxygen Available for Breathing Releases Heavy Gas (Vapor) which May Cause Suffocation	Use with adequate ventilation. Keep container closed. Do not enter storage areas unless adequately ventilated.
VI. Materials in Solid Form Hazardous from Inhalation or Contact	Hazardous (Inhalant) Dust Harmful If Inhaled Causes Irritation of Skin, Eyes, Nose, and Throat	The best breathing dust. Avoid breathing dust. Wash thoroughly before eating or smoking. Avoid contact with skin, eyes, and clothing.
VII. Skin Irritants - Corrosive	Causes Burns May Cause Burns	The best gas in eyes, on skin, on clothing. Avoid contact with skin, eyes, and clothing. Avoid exposure to (concentrated) vapor.
VIII. Materials Causing Skin Irritation after Long- or Repeated Contact	Causes Skin Irritation May Cause Skin Irritation	Avoid (prolonged or repeated) contact with skin. Wash thoroughly before eating or smoking. Avoid exposure to (concentrated) vapors.
IX. Materials Toxic through Skin Absorption	[Extremely] Hazardous (Inhalant) Solid (Liquid) (Rapidly) Absorbed through Skin [See NOTE opposite page]	Do not get in eyes, on skin, on clothing. Wash thoroughly after handling. Avoid breathing dust (vapor). Do not eat or drink (vapor). In case of inhalation [See Protective Measures, Pg. 13].
X. Materials Toxic if Swallowed	Poisonous if Swallowed May be Fatal If Swallowed Harmful If Swallowed [See NOTE opposite page]	Where required by law

Labels for Small Commercial Packages

The principles governing the preparation of warning labels discussed in Part I and the illustrative labels in Part II of this Manual have been developed primarily for bulk packages of chemicals intended for industrial use. The general principles apply, however, to chemicals packaged in small containers. These may include, among others, chemical products in retail packages intended for the ultimate consumer; highly purified chemicals intended for research, testing, or control; and chemicals intended for professional use such as in pharmacy.

As stated in the *General Principles* on page 10, each chemical product presents a distinct problem and must be treated individually in the light of its own characteristics. This same principle will apply to small containers. Small containers may present a problem of less available space for labeling purposes. Careful and selective shortening of warning statements for such containers may be in order if necessary to permit legibility, or if the wording on labels for the chemical in industrial packages is not applicable. Consideration should always be given to (1) the intended or reasonably anticipated handling or use of the particular product, (2) the training and experience of the expected user and (3) the extent to which the hazard is modified by the size or type of container.

The following principles are recommended for condensation of suggested label wording where necessary or advisable:

- (1) Retain the *Signal Word*;
- (2) Retain the *Statement of Hazards*, shortened if necessary to a practical equivalent;
- (3) Consider omission of *Precautionary Measures* if they are clearly indicated or implied from the *Statement of Hazards* or can be clearly indicated or implied by revising the *Statement of Hazards*;
- (4) Consider omission of wording relating to hazards that may be less serious because of the particular characteristics of the package, the nature of the use, and the training and experience of the user. Care must be taken to include precautionary measures for any additional hazard which may be present as a result of such characteristics, use, or training and experience;
- (5) Care should be taken that labels prepared in accordance with the above principles include all information required by law (see foot note on page 6).

Labels for Samples and for New Products for Investigational Use**Samples:**

In general, the label for samples of a product should bear the same precautionary information that is on the commercial label, with the exception of possible differences in container instructions. If the product is not in commercial production the label for samples should be prepared in accordance with the principles stated in this Manual.

New Products for Investigational Use:

Chemical, physical and toxicological data should be obtained on any product before it is distributed so that hazardous properties can be described on the label. However, it may occasionally be necessary to make delivery of a new product for investigational use before all of these data are obtained. For instance, the quantity available may be too small for necessary tests or the product may have to be delivered to investigators for the purpose of obtaining the desired information. These deliveries should be made to qualified investigators only and should be labeled as adequately as possible with the information available. To cover such cases (and such cases only) the following guide is suggested for preparing labels to be used during the period of investigation.

NAME OR DESCRIPTION OF PRODUCT	FOR INVESTIGATIONAL USE ONLY
SIGNAL WORD! STATEMENT OF KNOWN HAZARDS	
Appropriate precautionary measures Appropriate instructions in case of contact or exposure	
IMPORTANT! The chemical, physical, and toxicological properties of this product have not been fully investigated and its handling or use may [be hazardous] (present additional hazards). Exercise due care.	

Care should always be exercised in handling and storing containers of hazardous chemicals and in removing the contents. The Container Committee of the Manufacturing Chemists' Association, Inc., has recommended the general precautions given below for handling and storing certain classes of containers. Applicable phrases may be selected from these statements. These may be used either as separate labels or in combination with the warning labels given in Part II. Where the properties of the chemical require special or additional precautions, such instructions are indicated in some instances in conjunction with the individual label in Part II.

Metal Drum Handling and Storage (for liquids and semi-liquids)

- Keep plug up to prevent leakage.
- Keep drum out of sun and away from heat.
- Relieve internal pressure when received and at least weekly thereafter by firmly loosening plug. Retighten immediately.
- Never use pressure to empty.
- Keep lights, fire, and sparks away from drum openings.
- Drum must not be washed out or used for other purposes.
- Replace plug after each withdrawal and return with empty drum.
- In case of spillage, flush with plenty of water.

Glass Carboy Handling and Storage

- Before moving carboy be sure closure is securely fastened.
- Loosen closure carefully.
- Keep out of sun and away from heat.
- Never use pressure to empty.
- Completely drain carboy before returning.
- In case of spillage, flush with plenty of water.

Wooden Barrel Handling and Storage (for liquids and semi-liquids)

- Keep out of sun and away from heat.
- Store with bilge bung up.
- Never use pressure to empty.
- Drain completely.
- Keep barrel moist—driehage may cause leaks.
- In case of spillage, flush with plenty of water.

Cylinder Handling and Storage

- Keep away from heat.
- Do not store in sunlight.
- Never drop cylinders.
- Be sure connections are tight.
- ICG Regulations prohibit refilling cylinder without permission of owner.
- Have airline respirator or self-contained oxygen respirator available for emergency.

Container Handling and Storage

Aerosols in metal cans are used so widely in both industry and in the home that their appropriate labeling is of concern to all. This new type of container for products under pressure should receive more care in handling and storage than the ordinary sealed can under little or no pressure at normal temperatures.

The Precautionary Labeling Committee of the Chemical Specialties Manufacturers Association (50 East 41st Street, New York 17, New York) reviewed the matter carefully and in March 1951 proposed that the following labeling be used on all aerosol metal can containers:

WARNING!

Contents under pressure. Do not puncture.
Exposure to high temperatures may cause bursting.

Keep at room temperature—away from direct sunlight, radiators, stoves,
hot water and other heat.

Never throw container into fire or incinerator.

NOTE: Additional specific cautions for substances as to hazards to persons and property, etc., the safe discharge of contents, etc., will depend upon the particular product.

Appropriate modification of this labeling is suggested for aerosol containers made of other materials.

The Following Label Changes Have Been Made In The 4th Edition

MANUAL L-1 4th REVISION

1956

PART II

Illustrative Warning Labels for Industrial Chemicals

The warning labels in this section have been prepared to demonstrate the practical application of the principles in Part I to a number of chemical products intended for industrial use. The user should familiarize himself with Part I before adapting any of the label statements contained in Part II to his products. The chemicals were selected to illustrate labeling for the major types of hazards commonly encountered. Consequently the listing covers only a relatively few of the hazardous chemicals for which warning labels are necessary. In many cases these labels are applicable to other products some of which are listed with appropriate cross references.

The labeling of radio-active materials, the increasing use of which presents a number of special hazards, is a complex problem beyond the scope of this Manual. In designing labels for these materials, it is suggested that reference be made to Handbook No. 42 published by the U. S. Department of Commerce, National Bureau of Standards, entitled "Safe Handling of Radioactive Isotopes."

The labels are based on the properties of the named chemicals; the presence of other substances, including impurities, may alter these properties and necessitate additional or different precautionary information.

General information regarding the handling and storage of containers is not included on these labels. This subject is discussed under the heading, "Container Handling and Storage," page 20.

First aid treatment is given for a few products only. Such information may be desirable on other products. Where "clothing" is mentioned in first aid instructions, it should be understood to mean all articles of clothing, including shoes, garters, and other accessories. Shoes are specifically named in some instructions, because of special hazards arising from absorption of the chemical by leather.

The notation, "MCA Chemical Safety Data Sheet available," appearing with certain labels in this section refers to Data Sheets published by the Manufacturing Chemists' Association, Inc. These publications contain detailed information on the chemical, physical, and toxicological properties of the product, as well as information on shipping con-

PART II	
LABELS ADDED	Dichloroethyl Ether Diethyltertiobutamine Ethylendiamine Hydrofluoric Acid Anhydrous Mercuric Chloride Lead Acetate Methanol Morpholine Perchloric Acid Sodium Chlorate Sodium Hydroxide Sodium Sulfite Vinyl Chloride
LABELS DELETED	Arsenic Trichloride Calcium Cyanide
LABELS REVISED	Arcic Acid Barium Nitrate Benzene Carbon Tetrachloride Chromic Acid
PART III	
LABELS ADDED	LABELS REVISED
Antimony Potassium Tartrate	Aldrin
Arasite	Antu
Captan	Barium Fluosilicate
Chloranil	Calcium Arsenate
Chloro-IPC	Calcium Cyanide
p-Chlorophenyl p-Chlorobenzenesulfonate	Carbon Tetrachloride
Copper Compounds	Chloroform
Dalapon	Cyanides, Inorganic
Dichlorodiphenyl Dichloroethane	Dichlorodiphenyl Trichloroethane
Dinitro-octo-Cresol	Dieldrin
Endrin	Ethy Mercury Chloride
Ethy Mercury Acetate	Ethy Mercury Phosphate
Glycidin	Ethy Mercury para-Toluene Sulphonate
Hepactol	Heptachlor
Hypochoxitol	Hexamercurochlorophenol
IPC	Hydroxysuccinylchlorophenol
Malathion	Lead Acetate
MCP	Magnesium Arsenate
Methyl Mercury Dicyandiamide	Nasam
Methyl Parathion	Phenyl Mercury Acetate
Pheny Mercury Acetate	Sodium Chlorate
Potassium Granate	Styrene
Sodium Trichloroacetate	Zinc Arsenite
Thallium Sulfate	
Warfarin	
Zinc Phosphide	Lead Oxide Purple

in containers, labeling, storage, handling and protective equipment. Prices and a complete list of available Data Sheets may be obtained from the manufacturer. (See page 78 for list.)

This warning label suggested in this Manual should be used in addition to, or in combination with, any label required by law.

ACTADEHYDE

**DANGER! EXTREMELY FLAMMABLE
MAY FORM EXPLOSIVE PEROXIDES**

UNDER AIR PRESSURE

Do not expose to heat, sparks, and open flames or other ignition sources. Close container immediately after opening.

Keep container cool and breathing of vapor.

Below 43°F, before opening.

Do not transfer.

PHOSPHORIC ACID

CAUSES SEVERE BURNS

Do not get liquid or vapor in eyes, on skin, or clothing.

Do not breathe vapor.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MCA Chemical Safety Data Sheet available.

in containers, labeling, storage, handling and protective equipment. Prices and a complete list of available Data Sheets may be obtained from the manufacturer. (See page 78 for list.)

This warning label suggested in this Manual should be used in addition to, or in combination with, any label required by law.

ACETIC ACID, 80%

DANGER! CAUSES SEVERE BURNS

Do not get liquid or vapor in eyes, on skin, or clothing.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MCA Chemical Safety Data Sheet available.

ACETIC ACID, 56%-70%

WARNING! MAY CAUSE BURNS

Avoid contact with skin, eyes, and clothing.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MCA Chemical Safety Data Sheet available.

ACETIC ACID, 28%

CAUTION! MAY CAUSE BURNS

Avoid contact with skin, eyes, and clothing.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MCA Chemical Safety Data Sheet available.

ACETIC ANHYDRIDE

**DANGER! CAUSES SEVERE BURNS
VAPOR HARMFUL**

Do not get liquid or vapor in eyes, on skin, or clothing.

Do not breathe vapor.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MCA Chemical Safety Data Sheet available.

Exhibit 25



DEPARTMENT OF THE NAVY

BUREAU OF MEDICINE AND SURGERY

WASHINGTON 25, D.C.

IN REPLY REFER TO

BUMED-733-PR
A10-1/L5
15 January 1960

From: Chief, Bureau of Medicine and Surgery
To: Activities Submitting Occupational Health Reports (NavMed 576)

Subj: Occupational Health Hazards; Release No. 22

Ref: (a) MANMED 23-21

Encl: (1) List of Occupational Health Hazards (July - September 1959)

1. The Quarterly Occupational Health Reports (NavMed 576) for July through September 1959, submitted in accordance with reference (a), have been reviewed. Potential health hazards of special interest have been selected from these reports and are forwarded herewith as enclosure (1).

2. The compilation contained in enclosure (1) is intended as a ready reference to current problems, and in some instances will help avoid duplication in the solution of these problems. It is also intended to aid Medical Department personnel in the recognition of potentially hazardous materials and processes. Further detailed information regarding specific hazards noted in enclosure (1) may be obtained from the originating activity.

3. The information contained herein on the composition of materials is to be treated as manufacturer's "DISCREET" proprietary information, in accordance with SecNav Instruction 5570.1A of 6 April 1957, and is to be used solely for the control of potentially toxic materials. It is not to be released for any other purpose.

4. The request for information pertaining to the social and scientific activities of personnel engaged in the Occupational Health Program has been favorably received and is appreciated. A subtitle for industrial hygiene services provided the Fleet will be included henceforth under the subtitle "Shipboard Industrial Hygiene Surveys and Investigations".

LLOYD S. SHONE
By direction

Copy to: (2 copies each)

NDS&RCS

INSNAMEDACTS

Chiefs of Bureaus

CNO (OP 281)

MSTS

CMC

Derived from Industrial Health Reports
July 1959 through September 1959

Release No. 22

For Official USE Only

1. Chemical Health Hazards.

A. Inhalation Hazards Due to Gases, Vapors, Fumes and Dusts

1. 1,1,1-Trichloroethane. Following a Medical Admission to the Dispensary an investigation was made on a submarine undergoing repair. The workman involved had been preparing surfaces and brush painting with Plasite Paint Formula No. 7144 in the Sanitary Tank which was about four feet square and six feet deep. No ventilation was provided to the space and the workman had about a pint of the paint in the tank with him. After being in the tank approximately one hour he was found to be unconscious and removed to the Dispensary. A witness said that the workman was wearing an organic vapor respirator at the time of his removal from the tank.

Plasite Paint contains about 35% 1,1,1-Trichloroethane. Other common names for this solvent are Methyl Chloroform, Vythane, Chlorothene and Magselect. 1, 1, 1-Trichloroethane is very volatile, requiring little heat to cause evaporation. Plasite is an epoxy resin type paint and is mixed with an amine hardener prior to application. The exothermic reaction of the mixture may have been a factor in the workmen's exposure. The vapor is heavier than air and therefore tends to displace air in enclosed spaces. The organic vapor respirator worn by the workmen is designed to remove vapors from the air when concentrations do not exceed 1,000 parts per million (ppm). It had a knitted cotton facelet over the contact area between the face and the mask. In testing the efficiency of the respirator it was noted that it was not possible to pull a vacuum by closing off the inlets to the organic vapor cartridges. This indicated that the workman was breathing the contaminated air around the facelet. Because of the potential hazard involved in the Plasite application it was recommended that air supplied respirators and ventilation be provided during such work on interior surfaces. It was also recommended that organic vapor respirators be used only when applying petroleum spirit type paint vehicles and that the facelets be removed prior to issue. (1)

2. A request was received to test the cable tanks and cones of a cable-laying ship for oxygen content and for the presence of any toxic or injurious gases. The request was made because of a casualty occurring on a similar ship operating in the Atlantic. Oxygen valves ranged from 5.5% to 20.4% and carbon dioxide from 11.7% down to 0.0%. Carbon monoxide concentrations of about 5 ppm were found in one tank and its associated cone. Tests for hydrogen sulfide, chlorinated hydrocarbons, arsine, phosgene, nitrous gases, and flammable vapors (19)